



**Sample and results  
guidelines for  
sequencing services at the  
Garvan Institute of Medical Research**

October 2019



**Garvan Institute**  
of Medical Research

# Instructions for submitting Samples

Sequencing services are offered by the Garvan Institute of Medical Research's Kinghorn Centre for Clinical Genomics, through its Sequencing Laboratory (KCCGSL). Through KCCGSL, local and international customers can access clinically-accredited, scalable sequencing and expert genomic analysis.

## Overview of Sample submission process



1. Contact the Project Management team to discuss project via:
  - a. Email: [kccgseq@garvan.org.au](mailto:kccgseq@garvan.org.au)
  - b. Phone: +61 2 9355 5763; or
  - c. In person: on Level 6 of The Kinghorn Cancer Centre
2. Receive quote and login details to the KCCGSL billing system: <https://books.zoho.com/app#/home/>
3. Login and accept Quote
4. Submit a Purchase Order to [kccgseq@garvan.org.au](mailto:kccgseq@garvan.org.au)
5. Receive login details to the KCCGSL Customer Portal: <https://apps.kccg.garvan.org.au/sample-submission-x/#/home>
6. Receive email with link to manifest
7. KCCGSL-supplied FluidX barcoded tubes will be posted to you
8. Fill in and submit manifest
9. Wait for 'manifest Accepted' email
10. Aliquot your Samples into the KCCGSL-supplied FluidX barcoded tubes
11. Submit Samples to KCCGSL along with manifest label as per Shipping Requirements below

## Sample preparation requirements

The quality and quantity of input Sample (DNA/RNA or library) are critical determinants of the success of a sequencing run and the generation of robust sequencing data.

Please notify the Project Management team if the below requirements cannot be met by your Samples, and/or if there are special requirements for the handling of your Samples.

Samples that do not pass the following requirements, as assessed using our in-house QC protocols, will be removed from further processing and the Customer will be notified of next steps.

We cannot guarantee QC performance and sequencing metrics for FFPE-derived, bisulphite converted Samples or submitted libraries.

## Genomic DNA

- DNA should be extracted using Qiagen DNeasy / Tissue Extraction kits or equivalent. Please contact KCCGSL to ensure compatibility of the extraction protocol prior to extraction.
- Samples must be pure, intact and of high molecular weight.
- Samples must be free of contaminating nucleic acids.
- Samples must not be amplified (PCR, WGA, MDA etc.).

- DNA should be submitted in Qiagen Elution Buffer (EB), Illumina Resuspension Buffer (RSB) or similar (10mM Tris/1 mM EDTA).
- Sample concentration must be completed using a fluorometric assay specific to dsDNA (e.g. Picogreen, Qubit BR assay).
- Sample quality must be assessed prior to submission, preferably using a Bioanalyzer, LabChip GX (or similar).
- Samples must meet the following specifications (QC Metrics):

Protocol	Vol. (uL)	Conc. (ng/uL)	Insert Size	A260:280	Total
WGS: TruSeq Nano DNA Library Preparation Kit	100	10 - 40	450 bp	>=1.8	>=1 ug
WGS: KAPA Hyper PCR-Free Library Preparation Kit	100	12 - 100	400 bp	>=1.8	>=1.2 ug
WGS: Chromium Genome Solution Library Preparation Kit	100	5 - 20	Input gDNA with a mean length >50 Kb	>=1.8	>=0.5 ug
WES: Agilent Sure Select Capture Exome	100	10-40	300 bp	>=1.8	>=1ug
WGBS: ACCEL – NGS Methyl-Seq DNA Library Kit	100	>=10	350 bp	>=1.8	>=0.5 ug

## RNA (Total RNA, mRNA)

- Samples should be extracted using Qiagen RNeasy Extraction Kits or similar. Please contact KCCGSL prior to extraction to ensure compatibility and suitability of the extraction protocol.
- RNA must be submitted in DNase / RNase Free Water.
- Sample quantity and quality must be assessed prior to submission, preferably using a Bioanalyzer, LabChip GX (or similar).
- Samples may additionally be quantified via Picogreen Assay (or Qubit)
- Samples must meet the following specifications (QC Metrics):

Protocol	Vol. (uL)	Conc. (ng/uL)	RIN	A260:280	Total
KAPA RNA HyperPrep Kit with RiboErase* / KAPA mRNA HyperPrep Kit	20 - 30	100 - 150	>=8.0	>=2.0	>=3 ug

\* Only compatible with Human, Mouse and Rat

## Submitted Libraries

### HiSeq X Platform

Protocol	Vol. (uL)	Conc. (ng/uL)	Insert Size	A260:280	Total
Customer Submitted Library for WGS	30		Expected library size: 580 – 850 bp*		20 nM
Customer Submitted Chromium Library for WGS (HiSeq X)	30		Expected library size: 580 – 850 bp*		10 nM

\*If libraries fall outside of these parameters, please contact KCCGSL to discuss available options.

## NovaSeq 6000 platform

The following requirements apply for libraries prepared with the above listed library preparation kits. For any other library preparation or requirements, please contact the Project Management team to discuss the best option.

<b>Non-pooled (single libraries)</b>	<b>Minimum Vol. (uL)</b>	<b>Minimum Conc. (nM)</b>
S1, S2 or S4 Flowcell (per library)	20	20

<b>Pooled libraries</b>	<b>Minimum Vol. (uL)</b>	<b>Minimum Conc. (nM)</b>
S1 Flowcell (per flow cell)	30	20
S2 Flowcell (per flow cell)	50	20
S4 Flowcell (per flow cell)	100	20

\*If your library does not meet the minimum requirements, please contact KCCGSL to discuss available options.

## Manifest and tubes

Customers must fill in the online electronic manifest via the KCCGSL Customer Portal detailing several Sample characteristics. Customers must transfer Samples into the provided FluidX 2D barcoded tubes and ensure the caps are sealed tightly.

- The manifest is pre-filled with the associated tube barcode(s), providing a unique identification code for each submitted Sample. Please ensure that Sample details for each barcode matches the Sample aliquoted into that tube. In addition, ensure all the necessary details are filled out prior to submitting the manifest.
- KCCGSL will, within a reasonable period of receipt of the manifest submission, review the manifest against the Quote and either:
  - approve the manifest
  - decline the manifest and cancel the Order; or
  - if the manifest is identified as non-conforming, KCCGSL will contact the Customer to seek the agreement of the Customer for KCCGSL to issue a revised Quote (which may be subject to Special Conditions which will be specified in the revised Quote).
- If KCCGSL accepts the manifest, it will notify the Customer and request the Samples be sent to KCCGSL.
- KCCGSL will, within a reasonable period of receipt of the Samples, inspect the Samples in accordance with these guidelines and either:
  - accept the Samples;
  - decline to accept the Samples and cancel the Order;
  - decline to accept the Samples and hold the Order pending receipt of further information or further Samples; or
  - if the Samples are identified as non-conforming, contact the Customer to seek the agreement of the Customer to Sample Acceptance subject to Special Conditions which will be specified in a revised Quote (failing agreement, KCCGSL may decline to accept the Samples and cancel the Order).
- Samples sent in any container other than the FluidX 2D barcoded tubes provided by KCCGSL will not be accepted.
- We cannot accept Samples from you until we have received and approved your manifest. You will receive an email notification advising you to prepare your Samples for shipment.

# Turnaround time and delivery

The turnaround time, if any specified in a Quote, comprises of the period from the day of receipt and approval of Samples in the laboratory until data delivery of all data files to the specified recipients. In the event of failure to meet the required QC metrics, the Customer will be notified to seek an agreement on whether/how to proceed and the turnaround time revised.

## Provision and retention of Data Files

- A Data File is taken to be delivered when the Data File is released by Garvan for shipping on data storage media (if specified in the Quote) or is otherwise made available to the Customer on a cloud-based platform.
- If the Data File is to be made available to the Customer on a cloud-based platform, the Customer authorises Garvan to provide the Data File to the provider of that cloud-based platform.
- Garvan will retain the Data File for a period of 90 days from the date of delivery (**Retention Period**). If the Customer does not receive the Data File or the Data File is otherwise unavailable to the Customer on the relevant Data Delivery Platform, the Customer is responsible for contacting Garvan within the Retention Period to request that the Data File be delivered again. Garvan may not be able to provide Data Files after the Retention Period. Any Data Files provided after the Retention Period will be at an additional cost to the Customer.
- Delivery of the Data File is undertaken or facilitated by third-parties and Garvan is not liable to the Customer for the performance or non-performance of any such third-party in respect of the delivery of, or failure to deliver, the Data File.
- Where the Customer selects the cloud-based platform option for delivery of the Data File, Garvan will be required to disclose Personal Information relating to the Customer's personnel to the cloud-based platform provider to enable delivery of the Data File (for example, contact details necessary to create an account). The Customer must ensure that its personnel consent to such Personal Information being provided (having been informed that the cloud-based platform provider handles Personal Information in accordance with its privacy policy and that Garvan has not taken steps to ensure that the cloud-based platform provider does not breach the Australian Privacy Principles in relation to that information).
- **Data Delivery Platform** means a cloud-based platform for transfer and/or storage of a Data File (or physical data storage media if specified in the Quote).
- **Data File** means FASTQ format of DNA sequence data (or such other available data file format agreed with the Customer and specified in the Quote).

## Sample retention

As per clause 12 of the Terms and Conditions unless agreed otherwise in a Quote.

# Shipping requirements

- Please ensure that the barcoded tubes sit securely in the rack (if provided) and the lid is locked using the orange clips on the side of the rack. Ensure the rack containing the barcoded tubes is packaged into an appropriately rigid shipping container.
- If no rack is provided, prevent damage to your FluidX 2D tubes in transit by ensuring your tubes are stored securely as follows:
  - Place the Primary Receptacle (FluidX 2Dtube) into a Secondary Receptacle (tube rack, Falcon tube or BioBottle)
  - Place the Secondary Receptacle into a Tertiary Receptacle (padded outer packaging)
  - Package the Tertiary Receptacle into an appropriately rigid shipping container
- KCCGSL provides a shipping label with the manifest ID inside the package with your FluidX 2D tubes. Please affix this label to the outside of the shipping container.
- DNA Samples can be shipped on ice packs or on dry ice.
- RNA Samples must be shipped on dry ice.
- Submitted library Samples must be shipped on dry ice.
- Attach the provided shipping label addressed to KCCGSL as per below:

ATTN: KCCG Sequencing Laboratory  
Garvan Institute of Medical Research  
The Kinghorn Cancer Centre  
Precinct Loading Dock  
West Street (off Burton Street)  
Darlinghurst NSW 2010  
Australia  
Phone: +61 2 9355 5763

- At the time of shipping, please send an email notification to [kccgseq@garvan.org.au](mailto:kccgseq@garvan.org.au) with your express mail tracking number, as this will allow us to watch for your shipment.
- We will notify you when the Samples have been received and approved (under these guidelines) in the laboratory.

## For international customers:

In addition to the above instructions, please ensure that the following documents are clearly attached to the outer package:

- AQIS Import Permit (supplied by KCCGSL)
  - Manufacturer's Declaration (supplied by KCCGSL)
  - 4 copies of Customs Declaration (Customer to provide)
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- We recommend that you state a value of less than AUD\$1,000 (or equivalent) on any paperwork you provide, so as to not trigger a requirement for a Tax Invoice. Please note this is not the value of the sequencing project.
  - We currently recommend [World Courier](#), [LabCabs](#), [DGI](#) and [Logical Freight Solutions](#). We strongly advise against the use of DHL or FedEx for shipment of Samples to Australia.