Sample Submission Guide: Tissues, Blood and Cells

GenomeScan offers nucleic acid extraction services from various source materials suitable for most NGS applications. Table 1 outlines the specific requirements for source materials used in nucleic acid extraction. Depending on your project, the required input quantities may vary.

We recommend contacting us prior to sample collection, to ensure sufficient material is collected. If your source material or Shipping/ Collection Vial is not listed in Table 1, please contact us. We are eager to discuss the best approach to achieve your project goals.

If your samples contain a GMO (Genetically Modified Organism), please inform your Account Manager from GenomeScan before you send the samples.

In case you are going to provide a sample containing human and/or animal pathogens, (https://www.bureaubiosecurity.nl/en/biological-agents/combined-list-of-biological-agents) it is important to classify the biological risk early in the process so please inform your Account Manager from GenomeScan before you send the samples.

Table 1: Recommended input material for nucleic acid extraction, specifically intended for Illumina sequencing.

Source Material	Nucleic acid	Recommended Quantity	Shipping / Collection Vial
Fecal	DNA	Min. of 100 µl	Screw-cap microcentrifuge tube with O-ring seal
Whole Blood	DNA	1 ml	EDTA vacutainer tubes
Whole Blood	RNA	1 ml	PAXgene® Blood RNA Tubes
Blood Cells (e.g., PBMCs*)	DNA/RNA	Min. of 10^5 cells in 200 µl	Cryovial or 1.5 ml Eppendorf tube
Plasma	cfDNA	4 - 5 ml	Cryovial
Blood	cfDNA	One EDTA blood tube	EDTA vacutainer tubes
Cells (Human/Non-human)	DNA/RNA	Min. of 10^5 cells in 200 µl	Cryovial
Soil (Bacteria)	DNA	At least 10 grams	Sterile plastic containers with screw-on lids
Saliva	DNA	1 ml	Oragene® DNA Saliva Kit***
FF Tissue*	TNA**	Min. of 25 mg	Cryovial or 1.5 ml Eppendorf tube
FFPE tissue sections/curls*	TNA**	See 'Tissue sections' section	Sarstedt tube
FFPE tissue cores*	TNA**	0.6 mm core: 3 cores 3 mm core: 1 core	Sarstedt tube
Other sample types	Please contact your GenomeScan representative		

* FF = fresh frozen, FFPE = formalin fixed paraffin embedded, PBMC = peripheral blood mononuclear cells
** TNA = total nucleic acid
*** Oragene DNA Saliva kit or similar kit with stabilizing buffer like Zymo Safecollect Saliva, PAXgene Saliva Collectors

Tissue sections

For fresh frozen (FF) and formalin-fixed paraffin-embedded (FFPE) tissues, tissue sections are preferred over tissue blocks. Tissue sectioning eliminates the need for tissue disruption and allows for histological evaluation of the sample, which is crucial for ensuring a high tumor-cell percentage, excluding necrotic tissue, and avoiding contamination of epithelial tissue samples with high immune cell content. Through collaboration with expert pathologists, we can assist with sectioning and histological assessment of your tissues. When providing FFPE tissue sections, and since we follow the triple isolation method (DNA and RNA), the requirements are as follows:

- Three input samples must be provided per case.
- Samples can be submitted either on microscope slides or in 1.5 mL tubes.
- Each sample must contain sufficient material to support extraction of both DNA and RNA.

Please follow the general recommendations for section quantity and thickness as outlined in Table 2. Due to variables such as tissue cell density and surface area, actual numbers may vary. Note that we are unable to assess the input material provided, and nucleic acid extraction will proceed based on the provided tissue sections.

Table 2: Recommended number of tissue sections for FF and FFPE tissues.

Preservation	Tissue surface area	Section thickness	Number of sections
FF	> 1 cm^2	5 µm	10
	< 1 cm^2	5 µm	20
FFPE	> 1 cm^2	5 µm	5
	< 1 cm^2	5 µm	10

Considerations for FFPE sections

In cases involving small tissues, the tissue's surface area within the FFPE block may represent only a fraction of the total block surface area. When estimating the number of sections needed, please consider the actual tissue within the FFPE block, and exclude the excess paraffin. We also advise trimming away the excess paraffin, as excessive amounts of paraffin can interfere with nucleic acid extraction (see Figure 1).

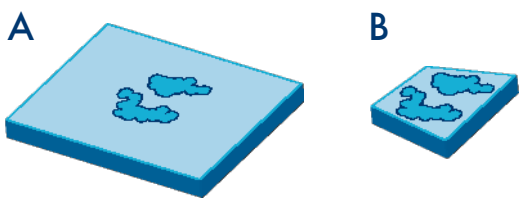

Figure 1: Trimming excess paraffin from FFPE block. **A:** before **B:** after

Sample QC

Our nucleic acid extraction service includes a sample quality control (QC) step to evaluate the quantity and quality of the extracted nucleic acid. If your project includes sequencing and the extracted nucleic acid fails to meet our entry requirements, we will contact you to discuss the available options with you.

Project initiation

Your project will be initiated upon receipt of the completed and signed purchase order (PO) form.

Sample Submission Form

After your project is initiated, you will receive a confirmation email containing a project number, a packing slip, shipment instructions and a Sample Submission Form (SSF) or Batch Confirmation Form (BCF). It is essential to return the fully completed SSF/BCF via email in .xlsx-format before proceeding with the sample shipment. Additionally, please include a printed copy of the SSF/BCF with your sample shipment and add the packing slip

Sample shipment / Delivery Requirements

Every sample must be clearly labelled with the GenomeScan ID (GS_ID) as specified in the SSF/BCF.

We require all frozen samples (e.g., tissues, cell pellets, or blood) to be shipped on dry-ice. Saliva collected with Oragene® DNA Saliva Kit and soil samples be shipped at room temperature. Samples should be shipped in the vial types outlined in Table 1. Other containers may be acceptable, but before shipment, please contact your GenomeScan representative.

For sample shipments, please address the package to your project manager by attaching a printed packing list (please use the version from the project initiation email) on the outside of the container and ship to the following address:

Shipping address:

GenomeScan B.V.
Plesmanlaan 1d, 4th floor
2333 BZ LEIDEN
The Netherlands

Remember that international shipment may experience longer than anticipated transit times. Ensure that your package includes adequate cooling materials to preserve the quality of your samples during transport. We highly recommend for sensitive and/or unique samples to use cold chain shipments.

Sample shipments should be delivered by courier or in person between 9:00 and 16:00 on regular workdays. Avoid scheduling sample shipments on days that would result in transit over weekends or during national holidays. Packages delivered outside opening hours cannot be accepted or may remain unopened overnight. Delivery in person needs to be announced with a message to laboratory@genomescan.nl. You are required to either leave the cooling materials on site or remain present until the samples can be personally handed over to a laboratory staff member. Please also attach the printed SSF/BCF to the package for quick identification.

As a company based in the Netherlands, we are closed on the following generally recognized public holidays: New Year's Day, Easter Monday, Kings Day (27th April), Ascension Day, Whit Monday and Christmas (25th and 26th December).

Biological Contaminants

Samples shipped to GenomeScan must be free of biological contaminants. Our laboratory operates in compliance with BSL-1 and BSL-2 regulations and cannot handle potentially hazardous materials. If you suspect your samples require higher biosafety levels, please contact us prior to sending your samples to us.