Gene expression | Total transcriptome | Ultra low-input | **FFPE tissue** | Single cell sequencing

Gene-expression profiling in FFPE cohorts

Robust RNA sequencing of (partly) degraded samples

Biobanks contain a wealth of gene-expression data from patients with diverse clinical conditions. The impact of treatments is meticulously documented and can be traced at the molecular level over time. Typically, these biobanks consist of Formalin Fixed Paraffin Embedded (FFPE) tissue. However, the challenge lies in the high degree of RNA degradation within FFPE cohorts, often hindering analyses and leading to the exclusion of crucial samples and/or essential time points.

GenomeScan provides a service specifically designed for expression profiling of FFPE or (partly) degraded samples. Additionally, our team of bioinformatics experts can optionally generate a comprehensive report, including presentation-ready figures.

Several factors can influence RNA quality, e.g., age of the blocks, pre-fixation treatments or handling procedures before fixation, storage conditions. Also, formalin fixation damages RNA, causing extensive shredding and modification of nucleotides.

Input material

Sample*

- Optimal total RNA amount for standard workflow: ≥ 1000 ng
- Optimal total RNA amount for low input workflow: 30 ng
- Optimal Degraded RNA (fragments >200 bp): DV200 ≥ 60%

Sequencing on Illumina NovaSeq platform

- Paired-end 150 bp (PE150)
- Unique Molecular Identifier tags
- Standard sequencing read depth: 60 million PE reads / sample

Deliverables

- FastQ files
- Quality score (Q30) ≥ 70%
- Project Report
- Optional data analysis with comprehensive report

*After validation, new projects start with a pilot experiment to assess the quality of the FFPE material of your cohort.

Committed to your project

What you get:
The best transcriptomics results

- Expert guidance in optimizing experimental design.
- Quality control at various stages to monitor sample performance.

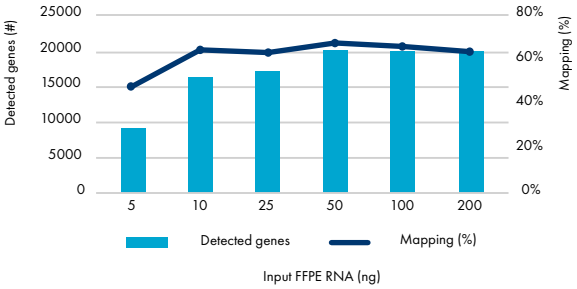
Additional services:
Extensive expertise in sample preparation

- Pathology review to determine tumor cell percentage (TCP) performed by certified pathologists from Leiden University Medical Centre (LUMC).
- If required, tumor microdissection performed by certified pathologists from Leiden University Medical Center (LUMC).
- RNA isolation from FFPE tissue.

Publication ready results

- Laboratory and data-analysis pipelines provide the optimal means for generating results that are suitable for publication.

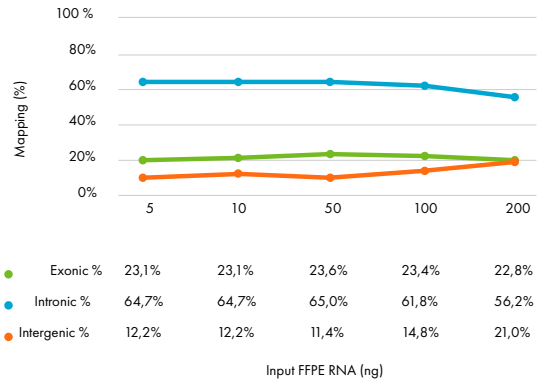
Optimal input helps maximize the number of detected genes and mapping percentage



Effect of the amount of FFPE RNA input on number of detected genes and percentage mapping

The optimum input is essential to maximize the number of detected genes and mapping percentage and will guarantee dependable results.

Gene-expression profiling on FFPE RNA is reproducible in a wide range of input amounts



Effect of the amount of FFPE RNA on mapping of the reads to exons, introns and intragenic regions.

A high concordance between results is a measure of robustness and reliability of the workflow.

Discover new biomarkers or prognostic markers for disease

Over the years, we have gained extensive expertise in generating reproducible datasets from FFPE blocks. In the study described below, RNA was obtained from a pool of multiple FFPE blocks (Isolation method: Qiagen All Prep DNA/RNA FFPE. Avg. insert size 318 bp ±22).

Our laboratory and data-analysis pipelines provide the optimal means for generating results that are biologically relevant. However, every FFPE cohort is different. Any new project will start with a pilot to explore the quality of the FFPE material of your cohort. This will reduce the chance of suboptimal data quality and quantity. We provide you data and guidance to make an informed decision before proceeding with the main study.

About GenomeScan

As an ISO-accredited leading Dutch Next Generation Sequencing service provider, GenomeScan develops customizable NGS solutions for pharmaceutical and biotech companies, healthcare providers and academic institutions. By providing state-of-the-art tools to analyze genetic disorders fast, affordably, and effectively, GenomeScan fosters innovation through partnership with medical centers and research laboratories.

genomescan.nl

+31 71 5681050

info@genomescan.nl

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