



Chip



Longreads



Methyl arrays



Targeted



WES



WGBS



WGS

Long Read Sequencing

Genomic, transcriptomic and epigenetic characterization with high precision

In contrast to short-read NGS solutions, which only sequence a few hundred bases, long-read technology generally can sequence up to 100's Kb per molecule and beyond. Beside the length, long read sequencing eliminates the PCR-amplification step utilized by short read platforms. Opposed to the large number of parallel reactions capturing short sequences, long read sequencing technology employs single molecules of circular templates immobilized on a surface.

Nucleotide incorporation is then detected in real-time for the generation of long reads.

Long read sequencing is rapidly becoming popular for studying complex and repetitive regions of the genome, structural changes and epigenetic heterogeneity. It is especially well adapted for *de-novo* genome assembly, for identifying complex transcripts and study the role of epigenetic modifications on certain disease conditions.

Input material

Purified DNA

- Validated input: ≥ 500 ng / sample
- Minimum volume: 15 µl / sample
- Quality: High Molecular Weight DNA (HMW), application dependent, Dual indexed Amplicons

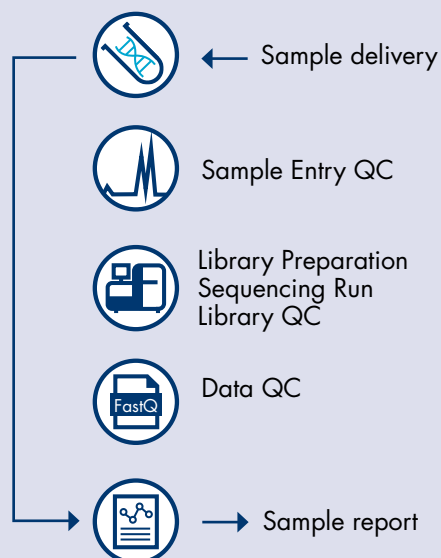
Sequencing on Sequel II

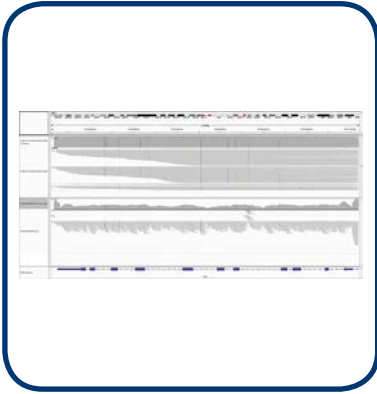
- Data generated from 4-6 million molecules
- Yield: 130-200 Gb (application dependent)

Deliverables

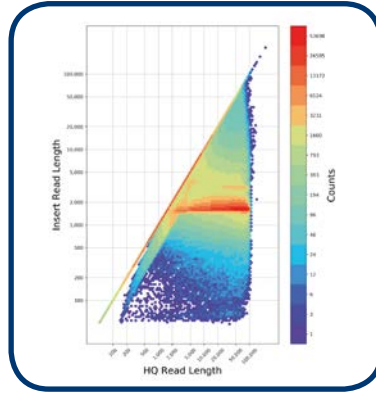
- TAT: 4-6 weeks after successful sample QC
- Raw data files (secured e-transfer or shipping on storage medium)
- Optional data analysis with comprehensive report

NGS Laboratory workflow





Long-read gene phasing



Sequencing read lengths



de novo assembly

It can particularly benefit researchers working on less characterized organisms.

GenomeScan has extensive experience with this technology and is one of the first companies to provide long-read sequencing as a service for *de-novo* assembly, structural variant calling, targeted , (Long) Amplicon or RNA-sequencing. Our scientists are ready to help you define the parameters of your long read sequencing project, ensuring the correct applications are used to answer your questions.

Committed to your project

Data quality guarantee:

Sequence quality control is an essential step in our workflow. We track, identify and exclude potential errors that could impact the interpretation of your results.

Long read sequencing:

With single molecule, real-time (SMRT) sequencing technology, we provide highly accurate long reads and are able to drive discoveries in different life sciences fields.

Reporting/Publication ready results:

We deliver comprehensive, consistent and transparent NGS data. Furthermore, we offer different visualization options to make your results ready for publication.

Data analysis options

In order to provide you easily comprehensible and ready-to-publish results, our workflow covers several steps that lead to insightful data visualizations (see frame). Depending on the application and your research question, we care for optimal interpretation of the data. Our highly experienced bio-informatics team has an arsenal of tools for either *de-novo* assemblies,

genome mapping and transcriptome analysis to facilitate a custom approach when needed to make fully use of the long read application.

Biological Insights

The biological insights that can be inferred from your data include:

- *de-novo* genome assembly
- Role of structural variants in human diseases
- Epigenetic modifications
- Haplotype phasing information
- Variable number tandem repeat analysis
- Long amplicon analysis
- Full-length transcriptome analysis
- Metagenomics

Customized Workflows

If necessary we can set-up a custom analysis plan with you. Bioinformatic pipelines can be tailored to your research and/or clinical needs allowing more in-depth mining of your dataset. We generate reports that optimally address your research and/or clinical question.

About GenomeScan

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