



Chip



Longreads



Methyl arrays



Targeted



WES



WGBS



WGS

# Whole Genome Sequencing (WGS)

The most comprehensive sequencing analysis with the widest coverage

Whole Genome Sequencing (WGS) provides the most comprehensive genetic blueprint of an organism. WGS is often conducted in exploratory analysis, for example in the investigation of rare diseases of unknown causes. GenomeScan offers an accredited (ISO/IEC 17025) WGS service across a multitude of diagnostics, therapeutics and research applications. WGS not only provides unique insights into disease mechanisms, but it also generates genome wide information opposed to Whole Exome Sequencing (WES) generating data for only 1-2% of the genome. It offers the ability to identify

copy number variations, insertions-deletions (indels), rearrangements and other structural variations. It helps you make an educated decision for the next step of your research project and offers you the advantage of reanalyzing and reinterpreting your data at any time.

By using unique molecular identifiers and unique dual-indexed sequencing adaptors, we are able to analyze hundreds of samples in parallel delivering the least bias and highest reproducibility, making WGS a very powerful and cost-effective tool for genetic profiling.

## Input material

### Isolated genomic DNA

- Validated input:
  - without PCR ≥ 100 ng / sample
  - with PCR ≥ 10 ng / sample
- Minimum volume: 20 µl / sample
- Quality: High Molecular Weight DNA

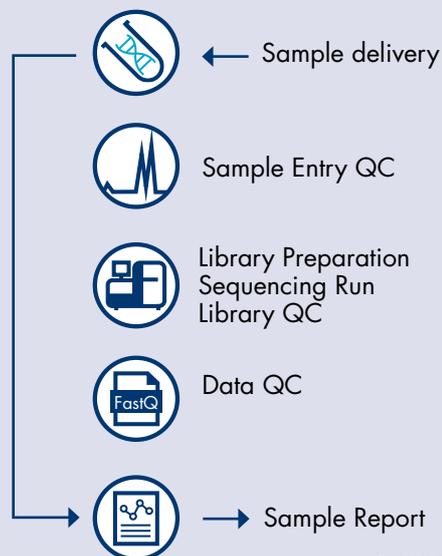
### Sequencing on NovaSeq 6000 (PE 150)

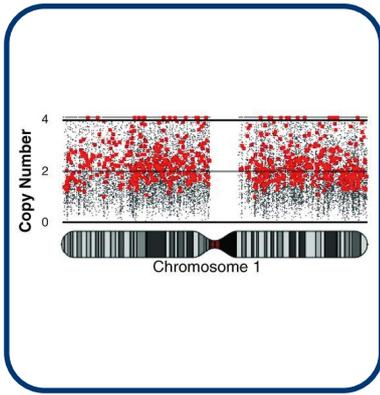
- PCR free library preparation (≥ 100 ng)
- Unique Molecular Identifiers
- Unique dual indexed sequencing adaptors

### Deliverables

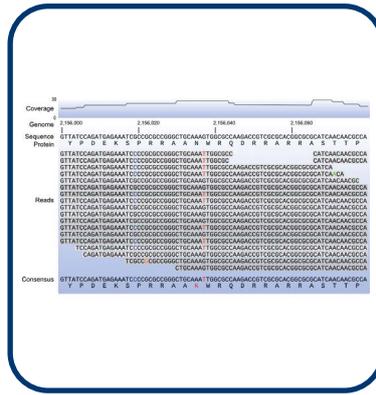
- FastQ files
- Quality score Q30 of ≥ 80%
- Optional data analysis with comprehensive report

## NGS Laboratory workflow

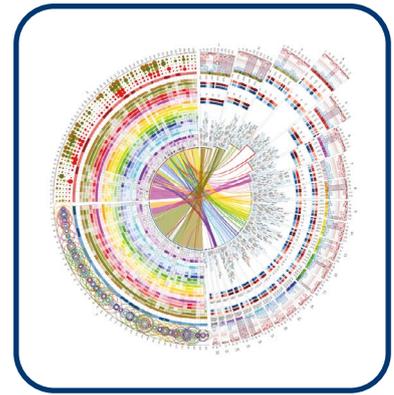




Mutation map on chromosome



Genetic variants detection



De novo assembly

## Committed to your project

### Data quality guarantee:

The purpose of data QC is to validate the precision and accuracy of your results. It helps to reduce the time you spend on sample verification.

### ISO 15189 and ISO/IEC 17025 accreditation:

The company strives for excellence and is committed to driving up standards in the field of NGS services. For our customers, this means consistency in our level of quality, service and support.

### Reporting/Publication ready results:

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

## Data analysis options

To understand the effect of genomic variations, the next step in your sequencing project is the analysis of millions of high-quality reads produced during the sequencing runs. At GenomeScan, we have a team of dedicated bioinformaticians that combine bioinformatics and statistical approaches with high-performance computing to assist you with the interpretation of your data. All information is manually reviewed by experts to comply with our high-quality standards and generate results you can trust.

For optimal interpretation of the data, our workflow covers preprocessing steps that include data trimming and alignment to reference sequences, followed by variant calling using golden standards. Afterwards we annotate variants for functional and disease relevance using multiple databases. Our data analysis report provides several visualization possibilities (see figures).

## Biological Insights

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

- All variant types reported: Single nucleotide polymorphisms (SNPs), indels, multi-nucleotide polymorphism (MNPs), and copy number variants (CNVs)
- Genomic rearrangements
- de-novo genome assembly and refinement
- Create gene models
- Annotation of variants

## Customized Pipelines

If necessary we can set-up a custom analysis plan with you. Bioinformatics 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.