Microbiome
Service Specification Sheet

Genome Scan

Full Genome

16S

16S-V4 Bacterial Profiling

Identification, quantitation and comparison of microbial populations (Taxonomic classification of complex mixtures)

Certain environmental or human samples such as soil, water or gut samples contain a complex mixture of cells. Profiling microbial populations from such environments requires employing a high accuracy method to differentiate between various types of cells. The fourth hypervariable domain (V4) of the 16S ribosomal RNA gene is a region of the prokaryotic, bacterial ribosome that is most commonly used for microbial profiling.

This region is selectively amplified, preventing contamination from eukaryotic hosts. Because of its hypervariability the region provides genus- and species-specific signatures that are used for microbial diversity analysis. GenomeScan's scientists have designed an optimized library preparation method leading to a yield higher than other kits available in the market.

Input material

Isolated genomic DNA

Isolated sample requirements

- Required input range: > 5 – 100 ng / sample
- Minimal volume of 25 µl / sample
- Genomic DNA, column or bead purified

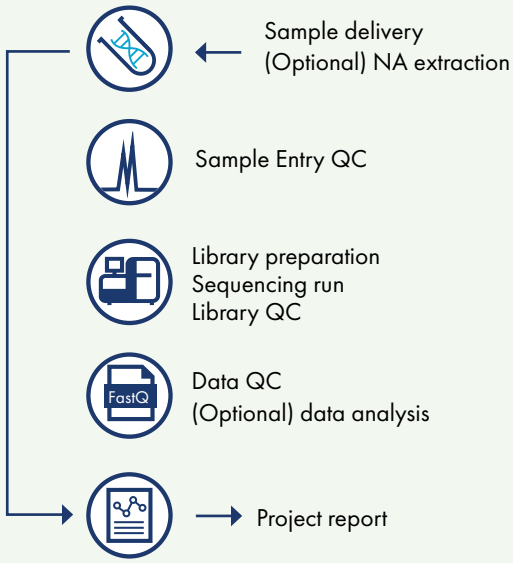
Sequencing on Illumina NovaSeq (PE 150)

- Standard read depth of 200k PE150 reads / sample
- Unique dual indexing combined with unique molecular identifiers

Deliverables

- FastQ files
- Quality score (Q30) ≥ 80%
- Project Report
- Optional data analysis with comprehensive report
- Samples < 0.5ng/µl will be processed as "own risk"

NGS Laboratory workflow



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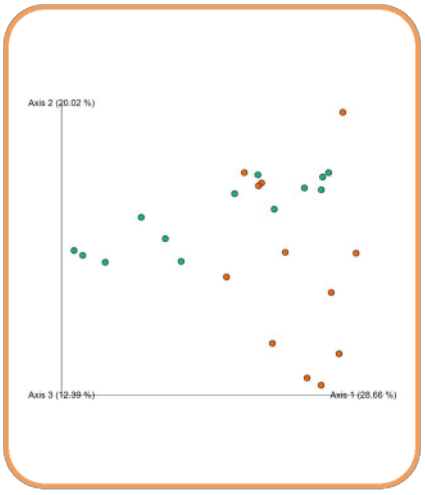

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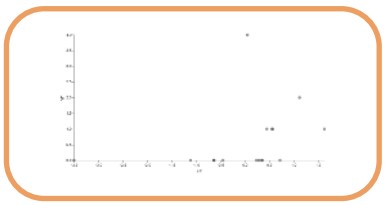

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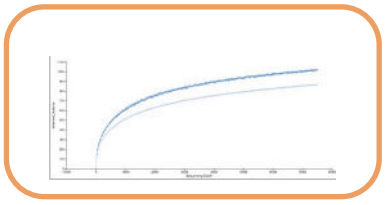
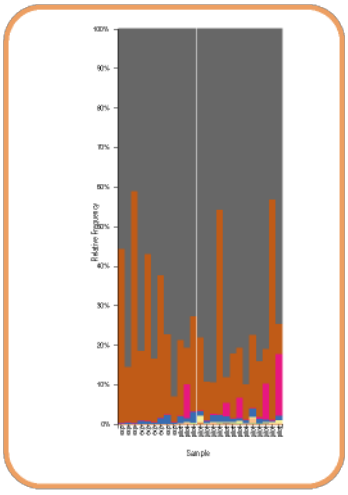


Rarefaction



Abundance

Committed to your project

Data quality guarantee

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

Hundreds of samples in parallel

By using unique dual-indexed sequencing adaptors, we are able to analyze hundreds of samples in parallel making this very reliable, powerful and cost-effective tool for microbial profiling.

Results

We deliver comprehensive, consistent and transparent NGS information. We offer different visualization options to present your results and/or comply with publisher's policies.

Data analysis options

To provide you with easily comprehensible and ready-topublish results, our workflow covers several steps that lead to reliable and insightful data visualizations (see below). Sequential steps include sequencing quality control and trimming of reads.
That is followed by inferring Amplicon Sequence Variants (ASVs), taxonomical classification and producing absolute and relative feature/taxa count tables and plots. In addition, plots of alpha rarefaction curves, alpha and beta diversity indices and plots thereof, as well as calls of differentially abundant taxa is performed. Our data analysis report provides a detailed overview of all the outputs that are delivered. The output contains, amongst others, a list of all detected microorganisms and their taxonomic rank as an informative table. Furthermore, interactive Principal Component Analysis and taxonomic abundance plots make visualizing sample compositions not only insightful, but also aesthetically pleasing.

Biological Insights

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

- Taxonomic classification in complex mixtures
- Detailed overview of the prokaryotic composition to family, genus or species level
- Clustering of samples based on similarity of microorganism abundance
- Identification of metagenomic biomarkers
- Determination of statistically significant differences in sample composition between pre-defined groups

Custom analysis

Bioinformatics can be performed allowing more in-depth mining of your dataset. We generate reports that optimally address your research question.

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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