

Next Generation Sequencing (NGS)

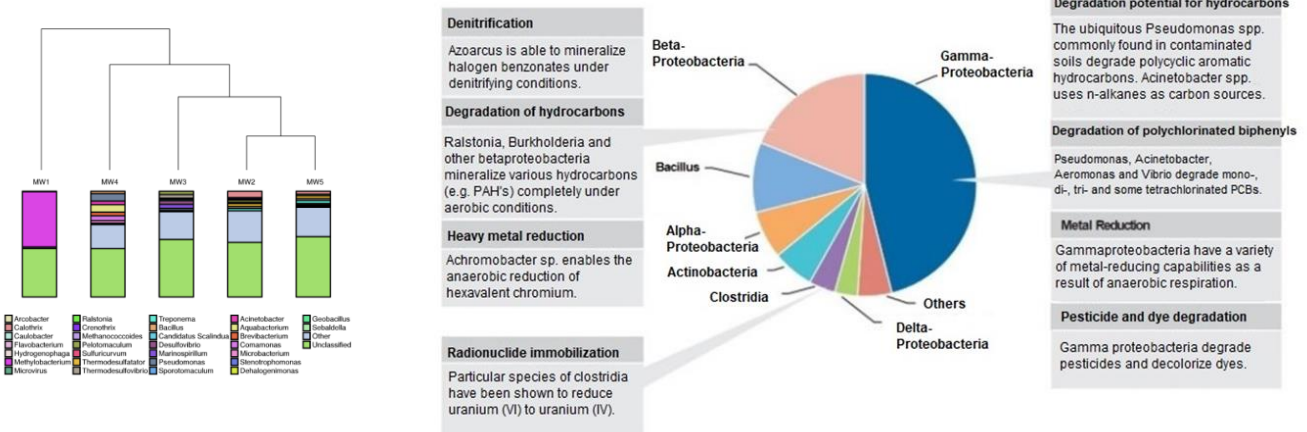
DNA sequences of microorganisms are detected, on the basis of which they can be assigned to their strains and families with their corresponding characteristics (enzyme spectrum, degradation pathways, etc.). NGS is suitable to describe the complete microbial community and to characterize the prevailing biogeochemical processes.

Next Generation Sequencing (NGS) refers to a molecular biological method in which the DNA molecules contained in the sample material are comprehensively and precisely sequenced, i.e. the actual base sequence of the DNA strand is determined.

DNA sequences of microorganisms are detected, based on which they can be assigned to their strains and families with their corresponding characteristics (enzyme spectrum, degradation pathways, etc.). NGS is suitable to describe the complete microbial community and consequently characterize predominant biogeochemical processes.

No other actual technique allows a more comprehensive characterization of the microbial community of an environmental sample. Therefore, NGS is used for contaminated sites primarily when the biodegradation pathways for the present contaminants or contaminant mixtures are not known (yet).

The comprehensive identification of the present microorganisms provides unprecedented insight into the possible microbial processes: Comparisons of microbial classes between samples can give information about differences or changes in microbial communities due to contaminants, over time, or in response to process operations and remediation.



In addition to its application in the field of environmental remediation, NGS is also used for other sectors such as the clarification of microbially caused corrosion processes.

Furthermore, NGS is suitable for initial identification of the microbial community in a sample when less is known about the process.

The results provide an insight into potential microbial activities and can be used to CENSUS qPCR targets for routine monitoring.