

Exploring microbial diversity of Moroccan Marine ecosystems using a Metagenomics approach:

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Marine ecosystems are among the most attractive fields in metagenomics. Thus, we propose to use this approach to explore the microbial diversity of Moroccan marine ecosystems. In our present study, we chose to target lagoons as ideal and specific marine locations to study microbial biodiversity. Our site of interest is the Nador lagoon “Marchica”, located in the North-East of Morocco. The outcome will be compared to results from other aquatic ecosystems, including an Atlantic Moroccan lagoon and both Mediterranean sea and Atlantic ocean sites, with regard to suggest which environmental factors influence the selection of microorganisms that might have an impact on the environmental and human health. During both June and December 2014 sampling campaigns, we performed the sampling in seven different marine Moroccan ecosystems including two lagoons. We measured physicochemical parameters in situ and filtrated water samples. We performed DNA extraction on the filtrated samples and sequencing using *illumina* platforms. We used metagenomics tools and pipelines for bioinformatics analysis. The results are available on the EBI metagenomics archive. Metagenomics RNA 16S Analysis revealed a total of 13 phylums in all Moroccan marine sites, both Mediterranean and Atlantic ones, showing approximately similar diversity and density. Unclassified Bacteria showed successively minimum and maximum percent in both Mediterranean and Atlantic ecosystems of 4.28-7.44 and 4.03-13.11. Up next, we will be investigating further these unclassified bacteria still unexplored in the Moroccan marine ecosystems. A thorough analysis will be conducted to extend beyond the identification of the phylum to genus and species level. Furthermore, we will also be analyzing the metabolic pathways in the community context. This will be the first time where such metagenomics approach is applied in Morocco to study aquatic ecosystems. This work is also part of the Ocean Sampling Day (OSD) consortium where our group is the coordinator for the Moroccan OSD network.

Key words: Metagenomics, environment, water, sea, ocean, lagoon, physico-chemical parameters, bioinformatics, bioindicators, Ocean Sampling day OSD, Micro B3, biodiversity.