Microorganisms are important to life on Earth, acting as decomposers in various ecosystems and playing a vital role in the nitrogen cycle.

In wastewater and leachate treatment systems, classical operational parameters are COD, BOD, total Kjeldahl nitrogen (TKN), ammonium, nitrite, and nitrate etc. So, identification of nitrifiers is also necessary to evaluate the conditions in biological nutrient removal systems. Because nitrifiers have low growth rates and they are more sensitive to toxic pollutants than heterotrophic carbonaceous bacteria.

Nitrogen converting microorganisms are playing a significant role for ammonia removal. Therefore, quantitative distribution of sensitive microorganisms (AOB (ammonia-oxidizing bacteria), NOB (Nitrite Oxidizing Bacteria), AOA (Ammonia Oxidizing Archea) and Anammox (Anaerobic Ammonia Oxidation) bacteria), which take place in nitrogen cycle analyzed in collected leachates from ISTAÇ Kömürçüoda Landfill Side and wastewater from a reactor of Istanbul University.

In this study, nitrification bacteria in samples taken from bioreactor and leachate treatment plant have been identified by using Real Time PCR and anammox bacteria in samples taken from Marmara University bioreactor have been identified by using Fluorescent In Situ Hybridization (FISH).