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## Diversity of Anaerobic Ammonium Oxidizing (ANAMMOX) Bacteria

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ANAMMOX is a recently discovered biological process in which microorganisms autotrophically oxidize ammonia to nitrogen gas with nitrite as the electron acceptor. ANAMMOX is regarded as an important bridge in geochemical nitrogen cycling and a promising process for nitrogen removal in wastewater treatment. The diversity of "aerobic" and anaerobic ammonia oxidizing bacteria in an ANAMMOX reactor was determined by 16S rRNA-based approach. The sequence of a newly discovered 16S rRNA clone (designated AS-1) reported here showed only 92% similarity with previously recognized three ANAMMOX-related genera. Additionally, a functional gene of ammonia monooxygenase (*amoA*) was analyzed to investigate the nitrifiers in  $\beta$ -*Proteobacteria*. All of fragments *amoA* were clustered in *Nitrosomonas* with two main groups which were known to oxidize ammonia at oxygen limiting conditions. The quantitative results from real-time PCR amplification of 16S rRNA genes showed that AS-1-like ANAMMOX bacteria occupied 30% of bacterial population (percent of rRNA gene copy number) in the reactors while "aerobic" ammonia oxidizing bacteria were 5%. Thus, AS-1 would be the fourth new groups in ANAMMOX bacteria.