A snapshot on prokaryotic diversity of the Solimoes River basin (Amazon, Brazil)

Abstract
The Amazon region has the largest hydrographic basin on the planet and is well known for its huge biodiversity of plants and animals. However, there is a lack of studies on aquatic microbial biodiversity in the Solimoes River, one of its main water courses. To investigate the microbial biodiversity of this region, we performed 16S rRNA gene clone libraries from Solimoes River and adjacent rivers and lakes. Our question was which microorganisms inhabit the different types of aquatic environments in this part of the basin, and how diversity varies among these environments (rivers and lakes). The microbial diversity generating 13 clone libraries of the bacterial 16S rRNA gene and 5 libraries of the archaeal 16S rRNA gene was assessed. Diversity measured by several alpha diversity indices (ACE, Chao, Shannon and Simpson) revealed significant differences in diversity indices between lake and river samples. The site with higher microbial diversity was in the Solimoes River (4S), downstream the confluence with Purus River. The most common bacterial taxon was the cosmopolitan Polynucleobacter genus, widely observed in all samples. The phylum Thaumarchaeota was the prevailing archaeal taxon. Our results provide the first insight into the microbial diversity of the world's largest river basin. (AU)