

# GENETIC CHARACTERIZATION AND PHYLOGENY OF CYANOBACTERIA FROM ATLANTIC FLOREST PHYLLOSPHERE

**Theme:** Metagenomics and biodiversity

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Cyanobacteria are the only organisms which hold both metabolic pathways – oxygenic photosynthesis and fixation of atmospheric nitrogen. They have been considered important primary producers of organic matter and combined nitrogen source for the whole ecosystem. The aim of this study was to evaluate genetically and phylogenetically cyanobacterial strains isolated from the phyllosphere of four tree species of the Atlantic forest by 16S rRNA gene analyses. The cyanobacterial strains were isolated from the leaves of Jussara palm (*Euterpe eulis*), bamboo (*Merostachys neesii*), *Guapira opposita* e *Garcinia gardneriana* species. The leaves were collected in Picinguaba and Santa Virgínia centers, located in the Parque Estadual da Serra do Mar, São Paulo. The isolated strains were cultivated in specific media for cyanobacteria and the genomic DNA was extracted. The PCR amplification of the 16S rRNA gene was performed using the primers 27F1 and 1494Rc. The PCR products were cloned and sequenced. The 16S rRNA gene sequences were processed to remove low quality bases (quality score <20), and compared with others deposited in GenBank (NCBI). The phylogenetic reconstruction was carried out using the Neighbor-Joining method. Up to now, it was sequenced 13 of the 39 isolated strains. Near-complete 16S rRNA gene sequences (ca. 1400 pb) of two strains isolated from bamboo, three from *G. opposita*, three from *G. gardneriana* and six from Jussara palm were obtained. The comparative analyses allowed the identification of ten strains at the genus level, seven belonging to *Nostoc*, two to *Leptolyngbya* and one unicellular to *Pleurocapsa* genera. Additionally, none of the sequences presented similarity values higher than 98% with others from the database. As an interesting finding, two sequences presented similarity values lower than 95%, which indicates a new taxa or strains not yet sequenced. This study allowed the phylogenetic characterization of novel strains and generated information concerning cyanobacteria taxonomy and ecology that inhabit a unique environment (Atlantic forest phyllosphere).

Keywords: epiphytic, 16S rRNA gene, bamboo, Jussara palm, *G. gardneriana*, *G. opposita*.

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