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**The first describing of a new species of the genus *Stigonema* Bornet & Flahault (Nostocales, Cyanobacteria) based on morphological and molecular data**

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In tropical and subtropical forests, cyanobacterial terrestrial communities, along with other organisms, compose extensive biofilms, which grow on a wide variety of substrates such as wood, soil and rocks. Cyanobacteria are the most important components of these biofilms, but unfortunately are still underestimated in terms of biodiversity. Because of that, we started an extensive study about cyanobacterial diversity in these environments and herein, we report the first describing of a new species of the genus *Stigonema* based on both morphological and molecular data. The sample was collected scraping a biofilm growing abundantly on a rock in the Atlantic Rainforest, specifically in the Ecological Station Juréia-Itatins, State of São Paulo. Material was kept dry into paper sack and rehydrated for 20 hours for microscope observation in laboratory. Total DNA was isolated from the environmental sample and PCR and sequencing were done as described before in specific papers. The phylogenetic 16S rRNA gene trees were constructed by Maximum Parsimony, Maximum Likelihood and Bayesian criteria. The population of the new species fits very well in the morphological circumscription of *Stigonema*, with true branches, pluriserial trichomes and thallus not diversified in distinct main filaments and branches. However, it could not be identified as any known species, because it features an unusual mosaic-sculptured mucilaginous sheath, never described before for stigonematacean types. Up to now, species of *Stigonema* were never described considering both morphological and molecular data, due to the difficulty of culturing these organisms, then this is the first report of a *Stigonema* described based on polyphasic approach. Conclusively, in order to validate the extant known types by molecular analysis, evaluate the main morphological markers for identification of species and improve the knowledge of the phylogeny of *Stigonema*, more methods for sequencing populations directly from nature or for culturing these organisms must be developed.

**Palavras-chave:** 16S phylogeny, biodiversity, mosaic-sculptured sheaths.

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