ERRATUM

LEMOS, L. N. **Integrative and *in silico* modeling of multi-omics data of Archaea and Bacteria phyla in Amazon soils / Modelagem integrativa e *in silico* de dados multi-ômicos de filos de Archaea e Bacteria em solos amazônicos**. 2019. 111 p. Tese (Doutorado em Ciências) - Centro de Energia Nuclear na Agricultura, Universidade de São Paulo, Piracicaba, 2019.

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6. FINAL CONSIDERATIONS

In this thesis, we developed an integrated computational approach to investigate the role of Bacteria and Archaea in Amazon soils, using massive sequencing technologies, bioinformatics and reconstruction of genomes from metagenomes (MAGs) to understand not only the diversity, but also the evolution, metabolism and biogeography distribution.

A discussion on Evolution, Biogeography, and Metabolism of Thaumarchaeota (Archaea) has been provided. In particular, we described the ecophysiology of terrestrial non-ammonia oxidizing Thaumarchaea and their potential role in the soil and sediments, as such Amazon floodplain forest and partially thawed permafrosted soils, and open new questions about the role of Thaumarchaeota in environmental samples.

On the other hand, further study is required to better elucidate the ecology of CPR/Patescibacteria, such as the design of new 16S rRNA primers to measure the abundance and structure of CPR/Patescibacteria in soil microbial communities, and their metabolism using metatranscriptomics and/or RNA-SIP.

In addition, the results reported in the microcosm experiment study suggests that (I) the effect of forest-to-pasture conversion on soil microbial communities was intensified when the moisture levels were increased, affecting the archaeal community structure; (II) the archaeal communities from forest were more resistant to the increase of the soil moisture levels, while the communities from pasture were more sensitive, enhancing the potential of methanogenesis in this soil. Furthermore, with the intensification of forest-to-pasture conversion in the Amazon region and the possible prolongation of the wet season as a result of climate change, this fact may result in more methane production in the near future, thus altering its global biogeochemical cycle. In this sense, a better understanding of the impacts of forest-to-pasture conversion on archaeal groups can help the development of a more sustainable management strategy, aiming to reduce methane emissions, with the strong support of the integrated computational approach as presented in this thesis.