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**This research aims to discover validate the endosymbiotic theory of chloroplast by comparing chloroplast DNA and cyanobacterial DNA using computational methods such as apriori and decision tree. We compared the nucleotide sequences of four plants that each represent four evolutionary classes, bryophytes, pterophyts, gymnosperms, and angiosperms, and Synechococcus DNA. The rules extracted from five experiment object commonly shown abundance in involution of aminoacid leucine and serine. 4 to 11 rules were shared between each chloroplast DNA and the Synechococcus DNA, supporting endosymbiotic theory. Also, the rules extracted from decision tree shown similar patterns, implicating the similar evolutionary steps of the chloroplast from cyanobacteria for different classifications.**

*Chloroplast DNA, Endosymbiotic theory, Synechococcus, Decision tree, Apriori*

**Kyuhee Jo** was born in 2000, in Seoul, Korea. She is currently a student in department of international studies of Hankuk Academy of Foreign Studies. She is currently studying computational biology. She is interested in algorithms that can be used to analyze nucleotide sequences, and its application in diverse fields of biology.

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