

Using DNA barcoding as a plant identifier and to determine phylogenetic relationships

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Plants are normally classified using taxonomic methods. However, this process can be tedious and requires the trained eye. DNA barcoding is a more recent, less time-consuming tool that can be used to identify plants. This method is based on the premise that since most plants contain chloroplasts, these plants carry the ribulose biphosphate carboxylase/oxygenase large subunit gene (*rbcL*) on the chloroplast genome. These genes contain short, highly variable regions unique to each plant species and therefore is a good candidate for plant identification using DNA barcoding. In order to identify the species of plants on campus and determine how related they might be to each other, DNA was isolated from plants in one of the courtyards near our Biology building. Conserved sequences that surround the variable *rbcL* gene were used as primers to amplify the barcoding regions using polymerase chain reaction. Gel electrophoresis was performed to confirm the amplification. The amplified DNA from each plant was sequenced and the Basic Local Alignment Search Tool (BLAST) and DNA Subway platforms were used to determine the identities of the plants and their phylogenetic relationships. The results of the analysis will be presented, and the real-life application discussed.