The familiar black and white barcode label that is present on most commercial products allows for billions of unique products to be identified and tracked. In the same manner, a short segment of variable DNA sequence should be able to identify different organisms from one another – i.e., a "DNA barcode". Among the uses for DNA barcoding being heralded are that it can: 1) identify an organism from only a small fragment of tissue rather than requiring the entire organism; 2) works at all stages of life, from seed to adult; and 3) unmasks look-alike species. To test the application of a plant DNA barcode, several gene fragments and intergenic spacers were sequenced for different accessions of Vanilla species from around the world. These unique "DNA barcodes" allow for easy identification of the plants from just a small fragment of leaf, stem, or fruit tissue. The ability to identify processed Vanilla beans as being derived from plants of a particular Vanilla orchid species could be an important application of molecular biology for the flavor and fragrance industry.

Systematics of Vanilla and related orchids: a test case for plant DNA barcoding

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