DNA Barcoding

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DNA barcoding
(Identifying species by DNA)

- **Barcode**- identification image that is readable through an optical machine.

- A short DNA sequence, from a uniform locality on the genome, used for identifying species
- Can be used to help discover, characterize and distinguish species, and to assign unidentified individuals to species
- The use of short DNA sequences for biological identifications was first proposed by Herbert et al. (2003)

BARCODE OF LIFE

- Provides an additional master key to knowledge about a species
- Compiling of public library of sequences linked to named specimens, plus faster and cheaper sequencing, will make this new barcode key increasingly practical and useful.

The sequences used for molecular barcoding are the nuclear small subunit ribosomal RNA gene (16S in prokaryotes and 18S in most eukaryotes), the nuclear large-subunit ribosomal RNA gene , the highly variable internal transcribed spacer (ITS, ITS1 and ITS2 regions), the mitochondrial CO1 or *cox1* gene and the chloroplast *rbc*L gene.

APPLICATIONS

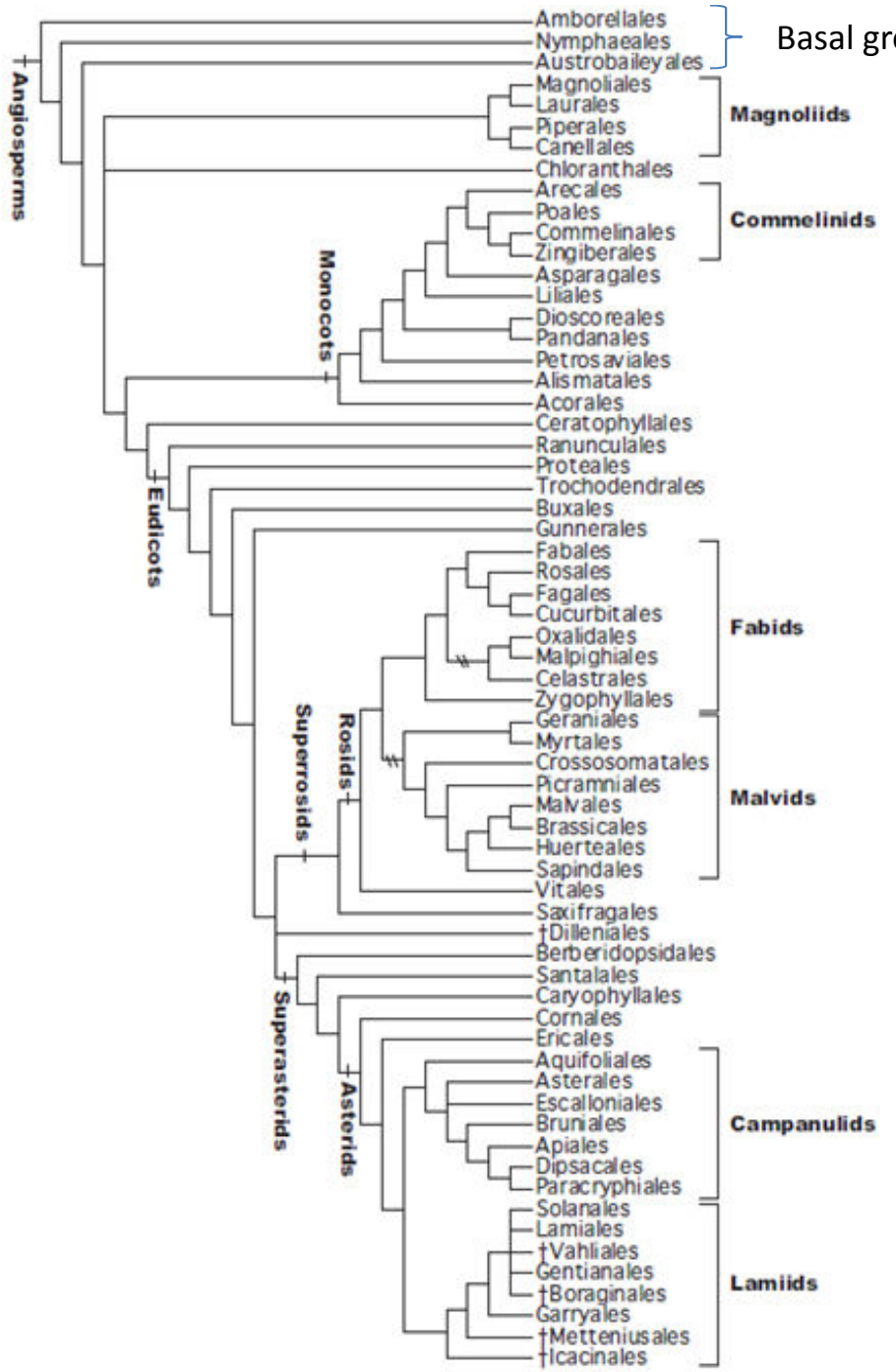
- Works with fragments(Even small plant parts)
- Works for all stages of life cycle
- Unmasks look-alikes as uses molecular sequences
- Reduces ambiguity(unclear, confusing)
- Makes expertise go further
- Democratizes access
- Opens the way for an electronic handheld field guide, the Life Barcoder

Broad outline of APG IV

A number of informal groups (i.e. clades) have been recognised, in which 64 orders and 416 families are distributed in the latest version of APG-IV classification system. These clades include:

MAGNOLIIDS ,MONOCOTS ,COMMELINIDS, EUDICOTS ,CORE EUDICOTS ,FABID,MALVID, ASTERIDS ,LAMIID,CAMPANULID (Included in APG III)

SUPERROSIDS and SUPERASTERIDS are two new clades included in APG IV


Amborellales
Nymphaeales
Austrobaileyales
Basal group/ANA or ANITA grade
Magnoliales
Laurales
Piperales
Canellales
Magnoliids
Chloranthales
Arecales
Poales
Commelinales
Zingiberales
Commelinids
not assigned any clade
Asparagales
Liliales
Dioscoreales
Pandanales
Petrosaviales
Alismatales
Acorales
Monocots
Ceratophyllales
Ranunculales
Proteales
Trochodendrales
Buxales
Gunnerales
Eudicots
Fabales
Rosales
Fagales
Cucurbitales
Oxalidales
Malpighiales
Celastrales
Zygophyllales
Fabids
Geraniales
Myrtales
Crossosomatales
Picramniales
Malvales
Brassicales
Huerteales
Sapindales
Malvids
Rosids
Vitales
Saxifragales
†Dilleniales
Berberidopsidales
Santalales
Caryophyllales
Cornales
Ericales
Superrosids
Aquifoliales
Asterales
Escalloniales
Bruniales
Apiales
Dipsacales
Paracryphiales
Campanulids
Asterids
Solanales
Lamiales
†Vahliales
Gentianales
†Boraginales
Garryales
†Metteniusales
†Icacinales
Lamiids
Superasterids
Angiosperms