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Identification Molecular of species phylogenesis To assign an unknown individual to a given species taxonomy and traceability Genetic relationships among species and evolutionary patterns between populations



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## DNA barcoding and its potentials for studying genetic diversity in animal species





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DNA barcoding and its potentials for studying genetic diversity in animal species







DNA barcoding and its potentials for studying genetic diversity in animal species DNA barcoding: main findings mtDNA barcoding in codefish using CO1 ÉR and Cytochrome-b as target genes SITA P1 P2 P3 G M N сутв COI Qualitative analysis (Y/N) BACKGROUND DNA barcoding: the identification of some taxonomic entity is problemati (merluzzi e naselli) Quantitative co analysis (%) 2 P3 100% 99% 95% Gianni Barcaccia Padua University Orto Botanico di Padova - 3 Maggio 2011 11



basic features in the animal kingdom

## DNA barcoding and its potentials for studying genetic diversity in animal species



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Target sequence	Sequence length (bp)	In/Dels (No.) for pairwise alignments	Sequence divergence (%) between Atropa belladonne and Nicotiana tabacum
trnK-rps16	707/685	6	4.1
trnH-psbA	412/453	8	3.9
rpl36-rps8	451/426	4	3.0
atpB-rbcL	815/818	1	2.8
ycf6-psbM	1,091/1,135	9	2.8
trnV-atpE	494/485	2	2.6
trnC-ycf6	681/670	4	2.4
psbM-trnD	1,099/1,081	10	2.4
trnL	363/357	2	2.2
rbcL	1,434/1,434	0	0.8
ITS	622/628	7	13.6

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genetic diversity in plant species

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A barcoding and its potentials for studying genetic diversity in plant species

## **CBOL: Consortium of Barcode Of Life** (www.barcoding.si.edu/DNABarCoding.html)



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BACKGROUND DNA barcoding: two-tier approach



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DNA barcoding and its potentials for studying genetic diversity in plant species



## (www.barcoding.si.edu/DNABarCoding.html)

2006: two-tier approach (multi-locus barcoding)

- first tier to get resolution among plants at the family or genus level using an universal highly conserved coding region;
- · second tier to discriminate at the species or variety level through a highly variable noncoding region.
- · rbcL gene guite conservative, encoding for ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit;
- trnH-psbA intergenic spacer, a more rapidly evolving region

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