

Line 1 – Plants biodiversity, Evolution and systematics

TITLE

Combined approaches to study plant biodiversity, evolution and systematics

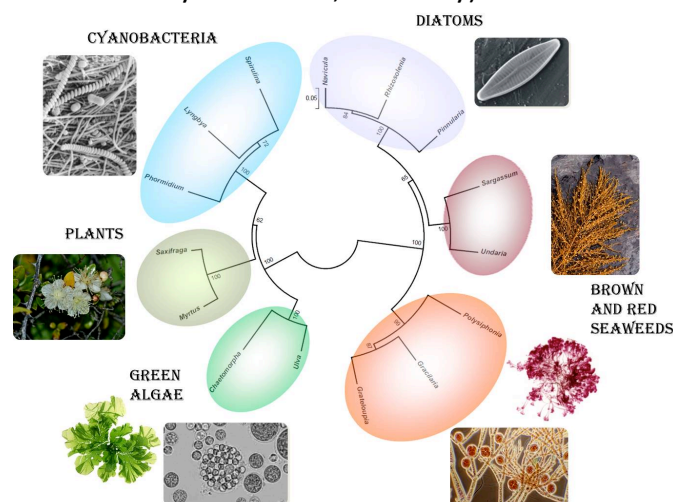
People involved: **Isabella Moro, Francesca Dalla Vecchia, Emanuela Moschin, Katia Sciuto, Marion Adelheid Wolf**

(isabella.moro@unipd.it; francesca.dallavecchia@unipd.it)

Project description

Traditionally, plant classification has been based on observation of morphological characters, but the advent of recent molecular techniques has underlined how morphology is not sufficient alone to properly identify organisms. Our research combines classical and molecular approaches to study the systematics and biodiversity of cyanobacteria, algae and plants. Morphological and ultrastructural observations are carried out through light and scanning electron microscopy and transmission electron microscopy, respectively. Molecular investigations, in particular based on the DNA barcoding method, allow to identify samples in taxonomic groups characterized by the presence of cryptic species and/or high phenotypic plasticity. Moreover, phylogenetic analyses are fundamental to reconstruct the evolutionary relationships among groups of organisms at different taxonomic levels and to detect new taxa (e.g. new species). The above described research line includes different projects:

1. Cyanobacterial biodiversity in extreme environments (e.g., Antarctica, thermal springs, caves);
2. Phytoplankton and seaweed biodiversity in the North Adriatic, in collaboration with Prof. A. Sfriso (Ca' Foscari University of Venice, Italy);
3. Systematics of coralline algae in the North Adriatic (Croatia), in collaboration with Dr. A. Falace (University of Trieste, Italy) and Dr. G.W. Maneveldt (University of the Western Cape, South Africa);
4. Comparison of the Ceramiaceae biodiversity in the Mediterranean Sea versus the Atlantic area, in collaboration with Prof. C.A. Maggs (Bournemouth University, UK);
5. Systematics and biogeography of the genus *Myrtus*, in collaboration with Dr. E.J. Lucas (Royal Botanical Gardens, Kew, UK), J.T. Rojo (Botanical Garden of the University of Granada, Spain), and Prof. H. Schäfer (Technical University of Munich, Germany).



Example of a phylogenetic reconstruction based on *rbcL* gene.