Development internal transcribed spacer region as DNA barcode to identify a new species of important horticulture orchid genus *Sarcochilus*

Sarcovanda

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Introduction

- Genus *Sarcochilus* has taxonomic and phylogenetic problem.
- This plant group is economically and horticulturally important crops.
- Information about taxonomic status for the group is needed.
- DNA barcode is modern technique to identify species.

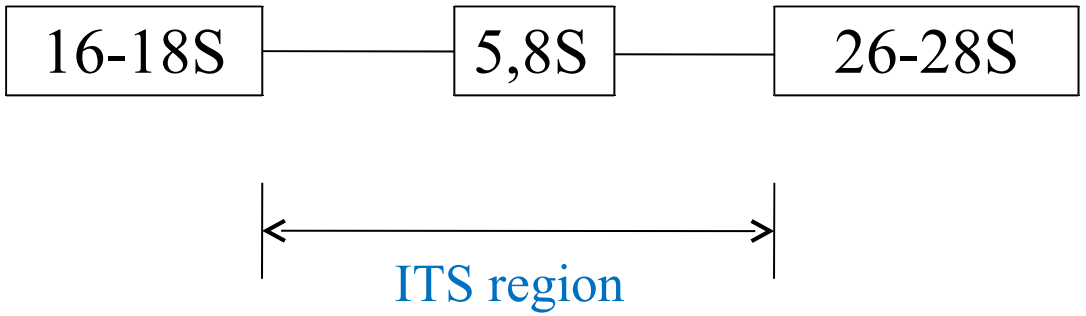
Barcoding is a standardized approach to identifying plants and animals by minimal sequences of DNA, called DNA barcodes.

DNA Barcode: A short DNA sequence, from a uniform locality on the genome, used for identifying species.

Purpose of the study:

"To assess Internal Transcribed Spacer (ITS) region as DNA barcode in evaluating the phylogenetic relationships between Papuasian *Sarcochilus* and *Sarcochilus* sensu strict"

The ITS region is good candidate barcode in plant: small size, high copy number, and variatif.



Materials and Methods:

Taxa	Source	Voucher
Rhinerrhiza divitiflora (Benth.) Rupp	AU	NA
Sarcochilus hartmannii F. Mueller	TBG	TBG145793
Sarcochilus hirticalcar (Dockrill) M.A. Clem. & B.J. Wallace	AU	NA
Sarcochilus moorei Schltr.	AU	NA
Sarcochilus spathulatus R.S. Rogers	AU	NA
Sarcochilus chrysanthus Schltr. **	TBG	TBG145831
Sarcochilus weinthalii F.M. Bailey	AU	NA

**Papuasian Sarcochilus*; AU=Australia; TBG=Tsukuba Botanic Garden

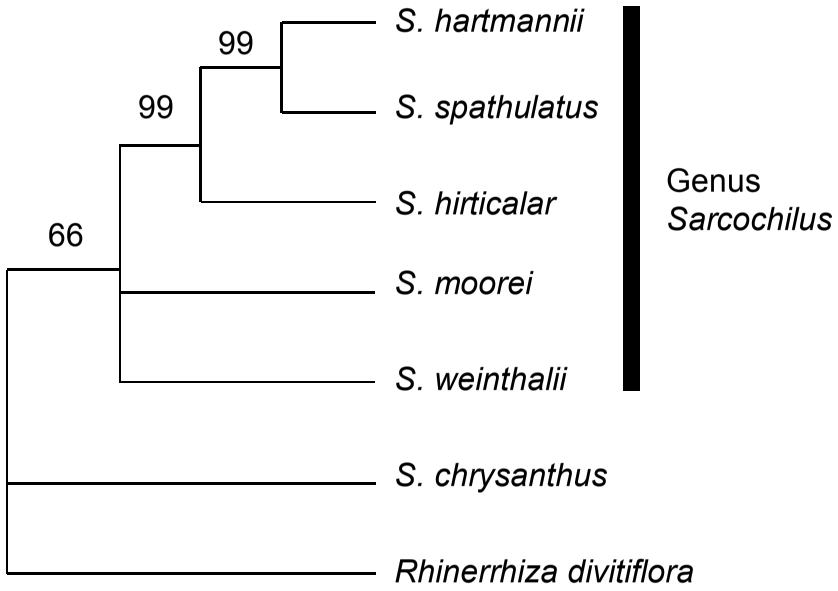
- Amplification and sequencing using primer pairs 17SE and 26SE

- Phylogenetic analysis is based on parsimony method using PAUP

Results and Discussion 1:

- Barcodes confirm the separation of the species *Sarcohilus chrysanthus* (The Papuasian *Sarcochilus*).
- Comparisons show the species differ from genus *Sarcochilus* at 60 locations.

Phylogenetic Tree



662 total characters: 547 constant, 83 uninformative, 32 informative

153 steps; CI= 0.876; RI= 0.548

Results and Discussion 2:

➢In comparison with Australian *Sarcochilus* (section *Eu-Sarcochilus*), the Papuasian *S. chrysanthus* has

- more elongated stems and spurs
- a single-flowered inflorescence
- the present of a rectangular, flattened callus in a distinct spur
- the absence of a columnfoot

➢The raising of section *Monantochilus* to generic rank by Rice (2004) to establish a new genus, namely, *Monanthochilus* is supported at the molecular level.

Conclusion:

- This study has shown that the ITS region can be served as DNA barcode to identify species in flowering plant (Orchidaceae in this case).

- It may be necessary to employ more than one locus to attain species-level discrimination across all flowering plant species.

Thank You Very Much