

# WHEN THE REFERENCE GENOME DOES NOT MATTER:

## recent and fast divergence species

Luana S. Soares<sup>1\*</sup>, Aureliano Bombarely<sup>2</sup> & Loreta B. Freitas<sup>1</sup>

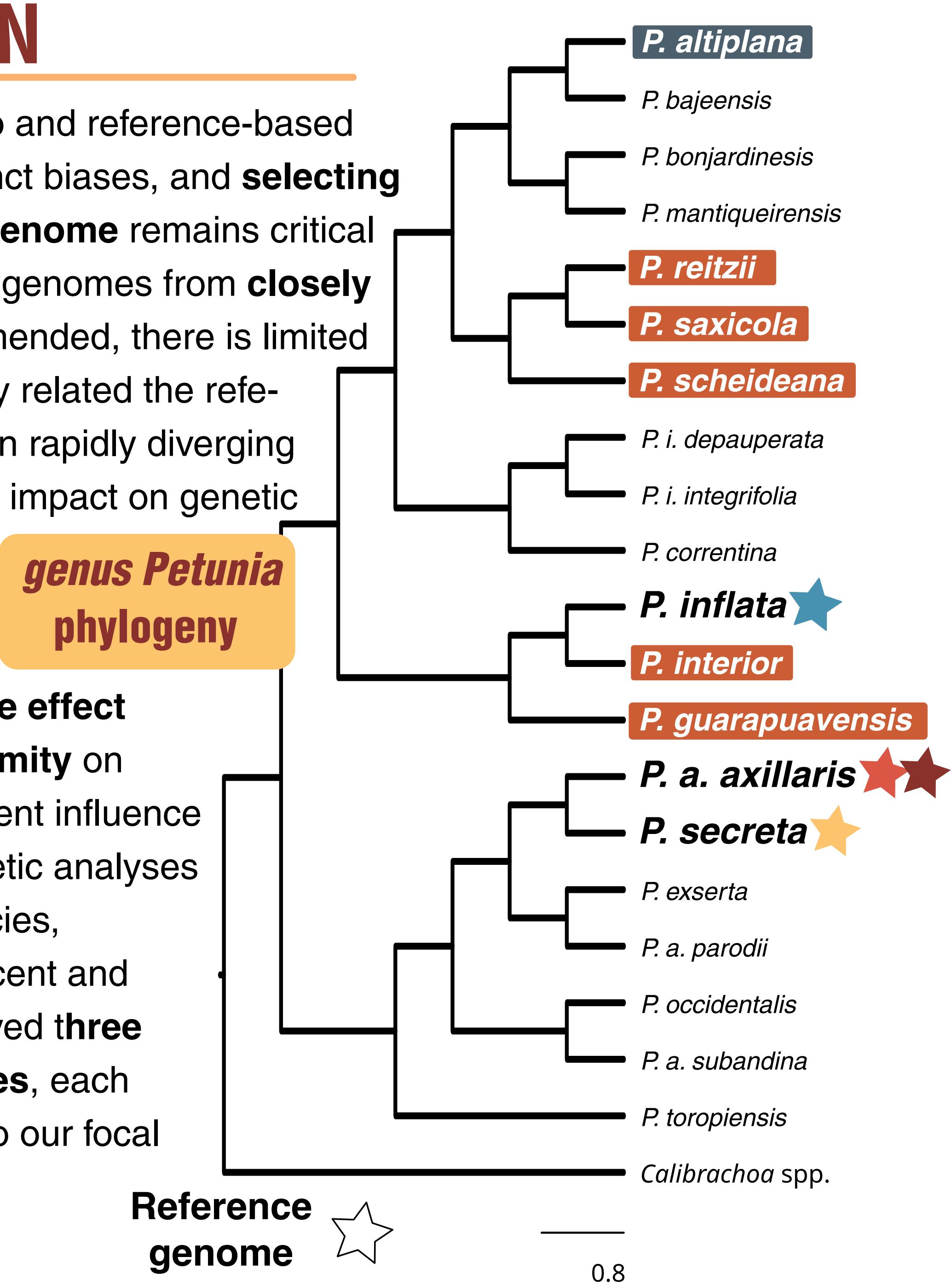
<sup>1</sup>Department of Genetics, Universidade Federal do Rio Grande do Sul, Porto Alegre - Brazil; <sup>2</sup>Instituto de Biología Molecular y Celular de Plantas (IBMCP) (CSIC-UPV), Valencia - Spain.

\*Correspondent author

## INTRODUCTION

The choice between de novo and reference-based approaches introduces distinct biases, and **selecting an appropriate reference genome** remains critical. While high-quality reference genomes from **closely related species** are recommended, there is limited understanding of how closely related the reference should be, especially in rapidly diverging species, and its downstream impact on genetic inference.

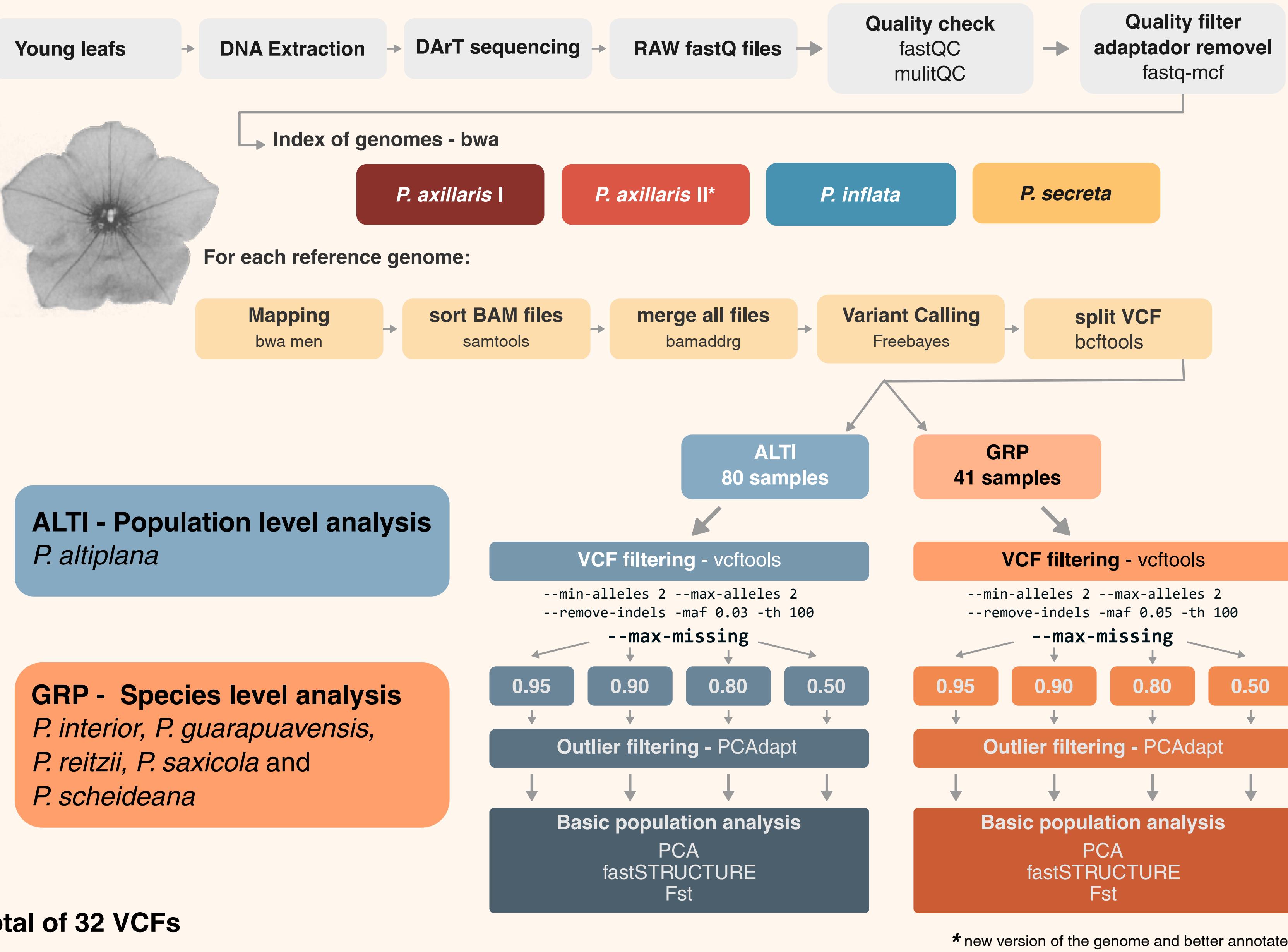
### genus *Petunia* phylogeny



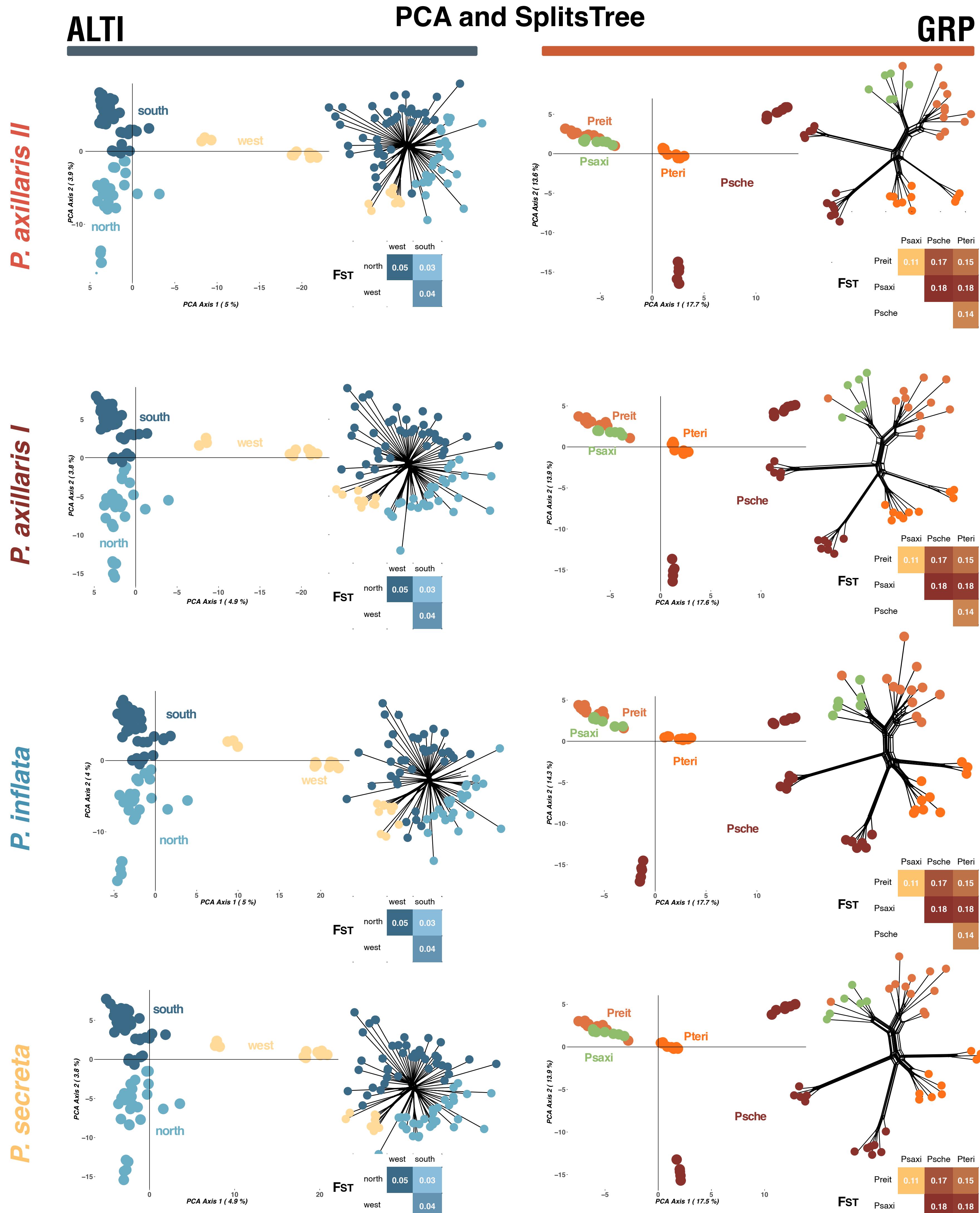
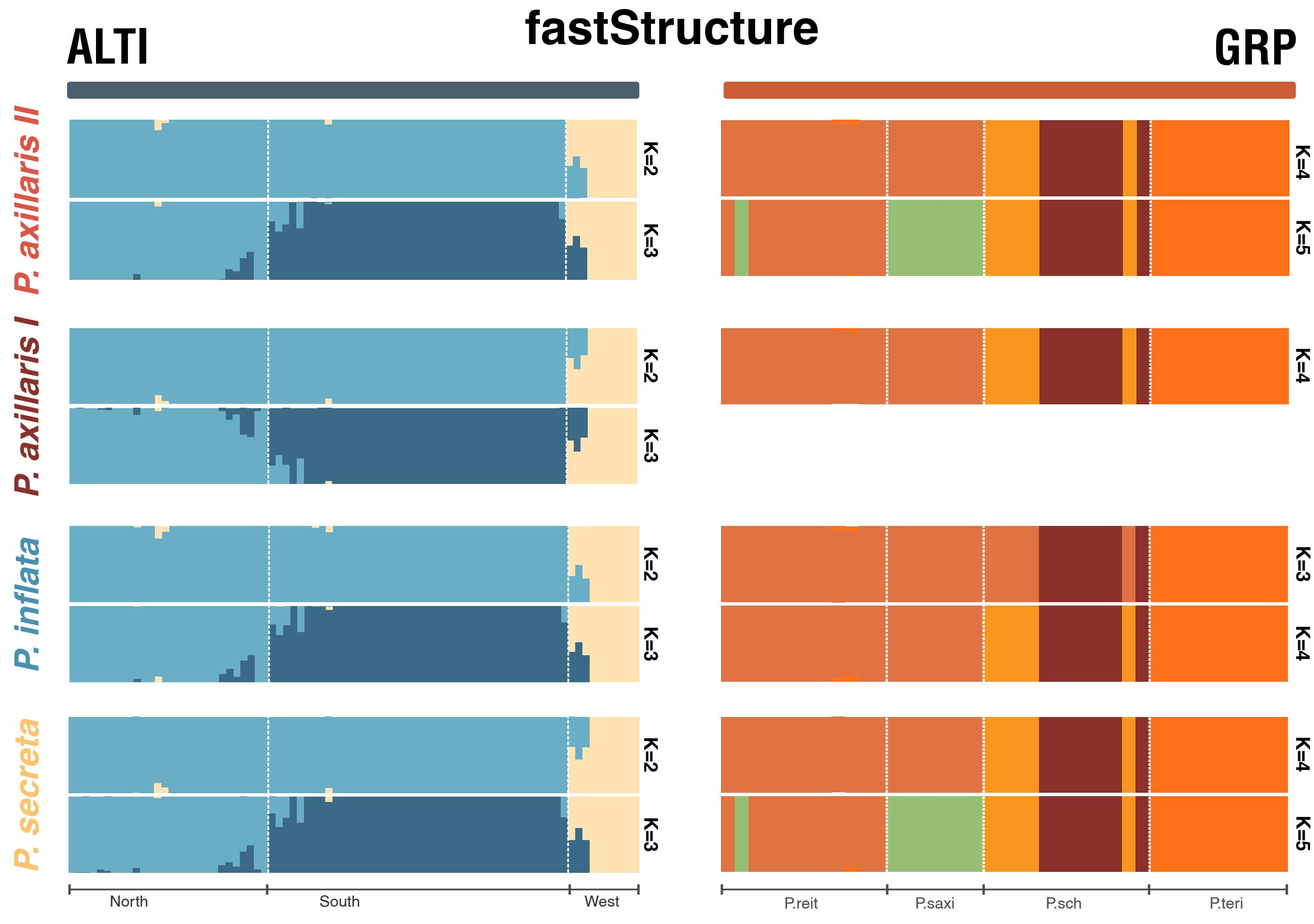
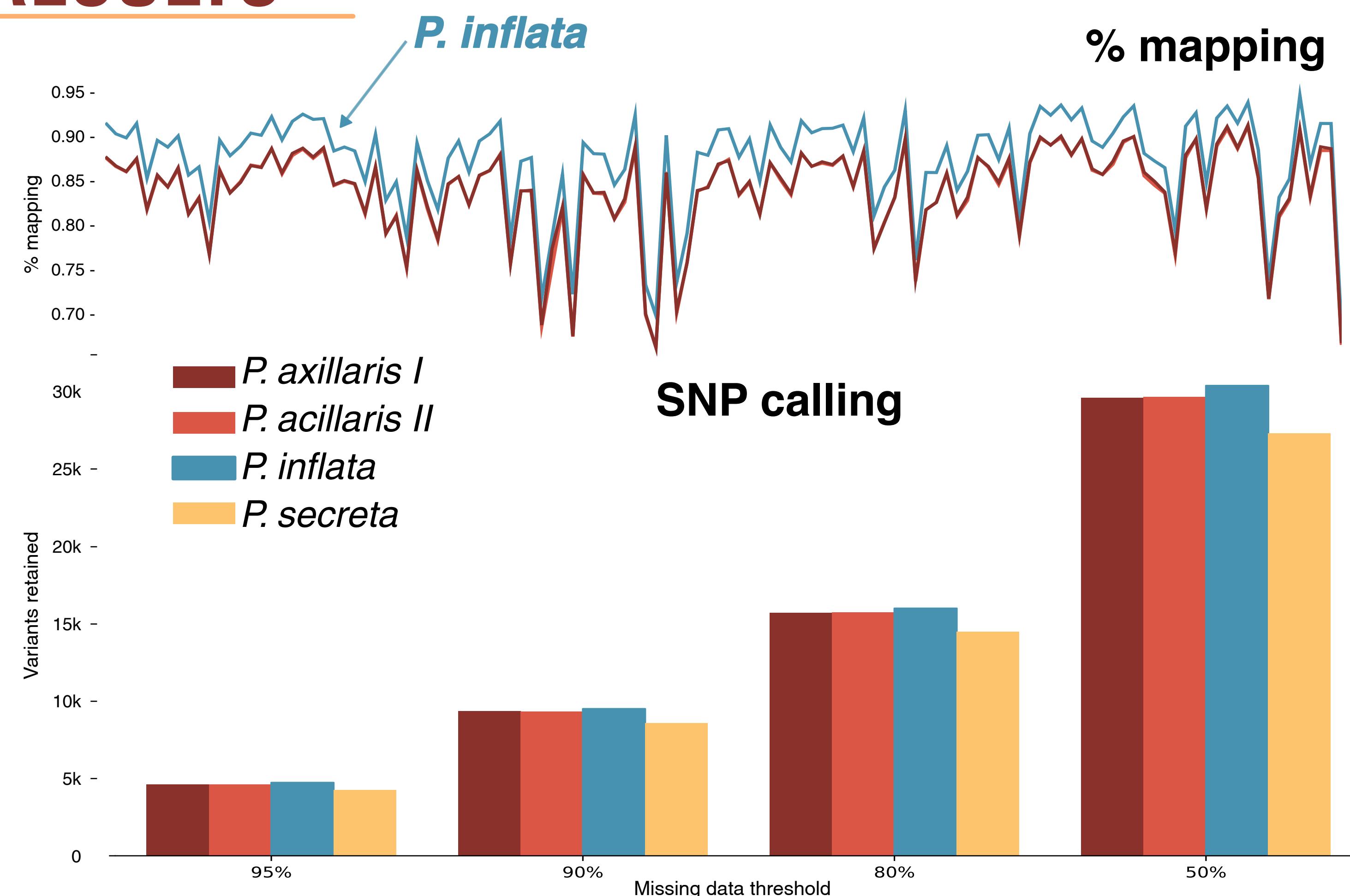
### AIM:

In this study, we **evaluate the effect of reference genome proximity** on SNP calling and its subsequent influence on population and phylogenetic analyses using highland *Petunia* species, a genus characterized by recent and rapid divergence. We employed **three different reference genomes**, each varying in genetic distance to our focal species

## METHODS



## RESULTS



## CONCLUSIONS

The findings indicate that, in recently diverged species, selection of a reference genome may not be such a crucial issue as had been previously thought. Genetic similarities between the focal and reference genomes are sufficient to return appropriate population and phylogenetic information, therefore relaxing the importance of reference choice for recently diverged species.