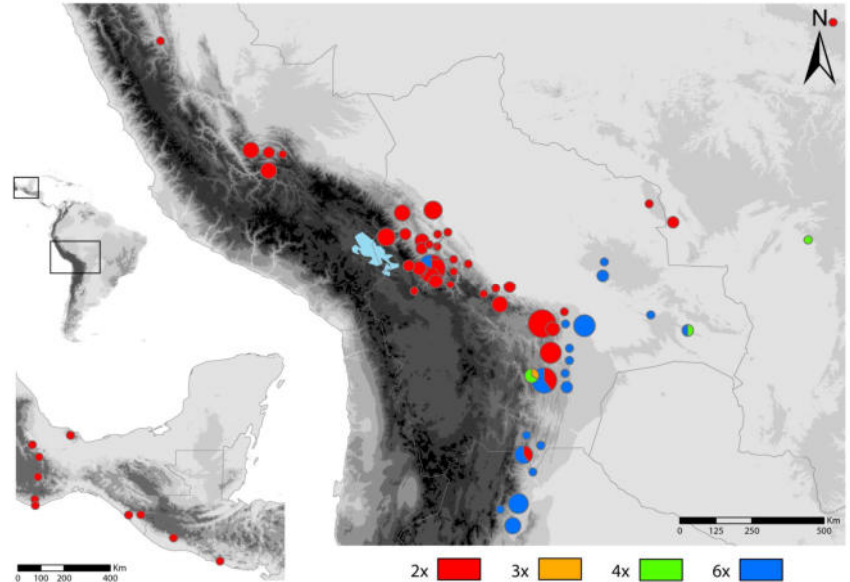
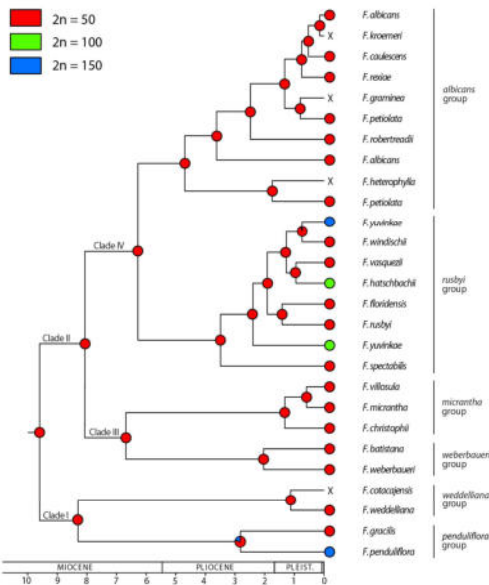


## Motivation and Results

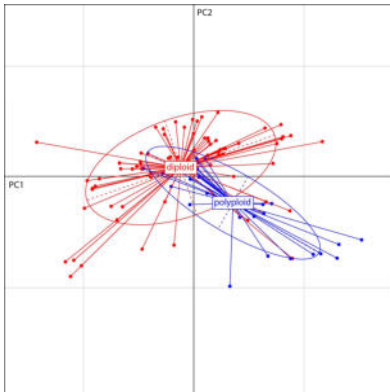
Due to altered genomic attributes polyploidy is often considered for fitness advantage over diploidy in climatically variable habitats (Comai 2005).

- Cytotype distribution in *Fosterella* (Bromeliaceae) was found to be climatically differentiated.
- Polyploids preferentially occupy colder and drier habitats than diploids.
- Polyploidizations were dated back to climatically variable Pliocene and Pleistocene periods.



1 Ancestral chromosome number reconstructions in the genus *Fosterella*. The scale bar below the tree represents time (Mya).

2 Distribution of studied *Fosterella* cytotypes (Paule et al. 2017).



3 Scatterplot of individual-based PCA based on climatic variables for studied *Fosterella*. Polyploids are significantly shifted towards colder and drier habitats.

## Contribution to SGN Program Portfolio

- It contributes to the complex view of **Earth system interactions** by integrating „geo“- and „bio“ perspective.
- As a **lesson from past** it enables to forecast possible genomic responses under climate fluctuations in future.
- Concerning future **applications**, the results may provide new possibilities for breeding of closely related crop species.



4 *Fosterella penduliflora* (C.H.Wright) L.B. Smith  
Foto: J. Peters

## Outlook

- common garden experiments under controlled conditions
- application of genomic and transcriptomic tools to identify the key elements of polyploid adaptability
- study additional polyploid complexes and eventually develop a general model of polyploid distribution in the Neotropics

## Acknowledgements

We are grateful to the curators and staff of the botanical gardens of the Goethe University, University of Kassel, University of Heidelberg, University of Vienna, and the Palmengarten Frankfurt for providing and cultivating plant material. This work was supported by the Deutsche Forschungsgemeinschaft [grant nos ZI 557/6-1, 6-2, SCHU 2426/2-1, WE 1830/5-2] and PROBRAL-DAAD.

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Paule J, Wagner N, Weising K, Zizka G. 2017. Ecological range shift in the polyploid members of the South American genus *Fosterella* (Bromeliaceae). *Annals of Botany* 120: 233–243.