

Looking for resilience? Who you gonna call? *Abies pinsapo* Boiss!

T1.12 Forest genetics tools to improve forest resilience to climate change and forest health

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Abstract

Currently, little is known about the molecular response to climate change-related stresses in the Spanish fir (*Abies pinsapo* Boiss), a conifer species of great ecological relevance, which is in danger of extinction. Furthermore, the lack of available complete genomes as well as standardised protocols for handling biological samples makes the study of molecular responses in conifers a difficult task. In this context, our group recently achieved the complete transcriptome assembly of *A. pinsapo* (Ortigosa et al. 2022), enabling functional genomic studies in this species.

Our study aims to shed light on molecular mechanisms governing the response to abiotic stress in *A. pinsapo* within its natural ecosystem by identifying gene families associated with the response to increased temperature and water stress. Our investigations have already identified candidates' genes and revealed their differential seasonal expression patterns across various tissues in *A. pinsapo* from distinct geographical areas and with diverse weather conditions. These findings hold the potential to significantly enhance our understanding of how *A. pinsapo* adapts to environmental stressors. Moreover, the acquired knowledge will provide important information for the development of sustainable forest management strategies in the vulnerable forest of the southern Iberian Peninsula, combating the adverse impact of climate change.