

# PINEA SPOT CONGRESS LISBON 2023 21 TO 23 NOVEMBER

## Morphogenesis and organogenesis from *in vitro* cultures of *Pinus pinea* L.

Ana Catarina Mendes, Cátia Pereira & Jorge M. Canhoto\*

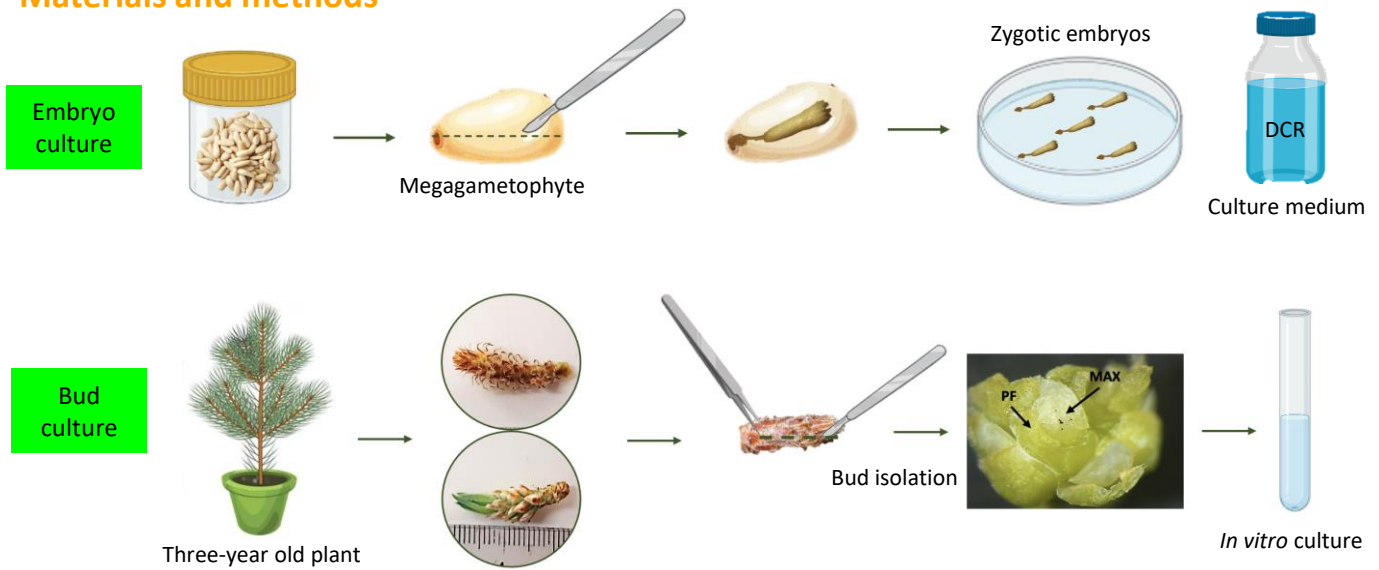
Centre for Functional Ecology, Associate Laboratory TERRA, Dep. of Life Sciences, Univ. of Coimbra, Portugal  
\*jorgecan@ci.uc.pt



Distribution of *P. pinea* around the Mediterranean basin (Euforgen - [www.euforgen.org/](http://www.euforgen.org/))

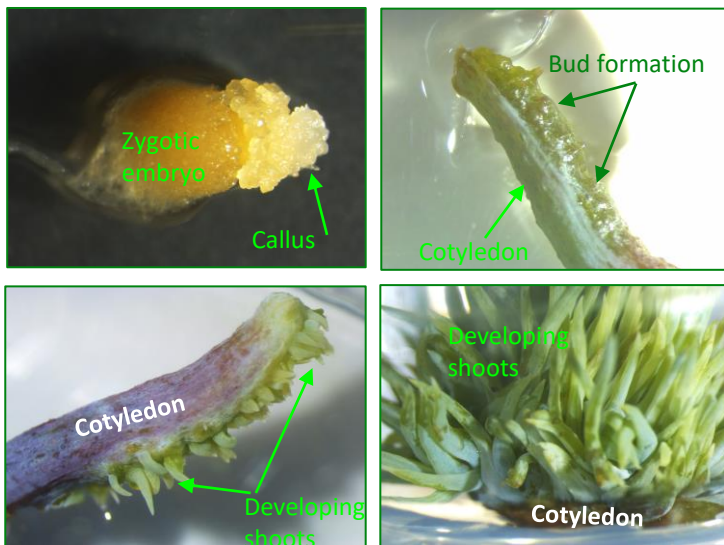
**Stone pine** (*Pinus pinea* L.) is a highly valuable species a species of interest for reforestation and biodiversity conservation. However, its propagation by conventional means presents some limitations that can be minimised, or even overcome through the development of an effective micropropagation protocol. In this work we have tried the induction of organogenesis and somatic embryogenesis from different types of explants.

### Materials and methods



Mature and immature zygotic embryos, as well as isolated cotyledons were cultured in MS, EDM e DCR basal media supplemented with different concentrations of auxins (NAA) and cytokinins (BA). Developing buds from adult and three-year old plants were also cultured. In the case of organogenesis induction, adventitious shoots were transferred to media with lower plant growth regulators concentrations to promote further development.

### Results and discussion



Callus (top left) obtained from a zygotic embryo and shoots from cultured cotyledons (all the other pictures).

Calli induced from all the explants showed no embryogenic potential. The most promising results were obtained with the induction of **organogenesis**. Cotyledons cultured in DCR medium with 1.12 mg/l BA yielded an average of 135 shoots per cotyledon. Most of the shoots developed in a direct way, without visible callus formation. Since epidermal and subepidermic parenchyma cotyledonary cells have showed organogenic potential, it is plausible to admit that these cells have the ability do easily divide and enter a putative embryogenic pathway once the conditions of culture are most appropriate. Future experiments will be focused in shoot rooting and acclimatisation.



This research was funded by F4F-Forest for the future (CENTRO-08-5864-FSE-000031, Programa Operacional Regional do Centro, Fundo Social Europeu) through the COMPETE 2020 - Operational Programme for Competitiveness, and Internationalization and carried out at the R&D Unit Center for Functional Ecology – Science for People and the Planet (CFE, UIDB/04004/2020, financed by the FCT(Fundação para a Ciência e a Tecnologia

