A New Molecular System for a Highly Efficiency of In Vitro Plant Propagation

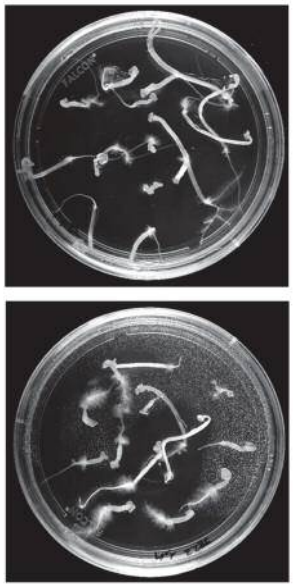
CSIC has developed the use of mammal kinase inhibitors to promote in vitro induction of plant embryogenesis and plant regeneration.

Industrial partners from companies for regeneration, propagation and selection of high quality/adapted plant material in agroforestry and industrial sectors are being sought to collaborate through a patent licence agreement

An offer for Patent Licensing

Mammal kinase inhibitors to promote in vitro embryogenesis induction of plants

Somatic embryogenesis has a great potential for large-scale propagation and cryo-preservation of tree elite genotypes, as well as for transformation strategies. The primary advantage of in vitro plant propagation is the rapid production of high numbers of high quality, disease-free and uniform planting material for agroindustry companies. Despite decades of research, poor in vitro regeneration is still a lingering problem with the process still being highly inefficient in many species of economic interest in the fields of agriculture and forestry, a fact that severely affects the application and cost of this technology in plant breeding and conservation programs. The inventors have demonstrated that mammal kinase inhibitors, lead to an increase in the in vitro embryogenesis induction. This surprising effect is obtained with several inhibitors for several identified kinases and the increase in induction of plant embryogenesis is obtained both in liquid and in solid embryogenesis cultures using as a starting material both microspores (microspore embryogenesis) as well as other plant explants (somatic embryogenesis) in crop and forest plant species. These experiments support the use of such small molecule inhibitors of mammal kinases as new tools to promote the induction and optimization of in vitro plant embryogenesis.



Evaluation of germination capacity of embryos produced in microspore cultures of B. napus. Germinating embryos from control (up) and treated (down) cultures, showing well-developed roots and hypocotyls in most embryos, in both conditions.

Main innovations and advantages

- It is a new tool to promote the induction and optimization of in vitro plant embryogenesis.
- It works from both somatic cells and microspores, in crop and forest plant species.
- It has a great potential for large-scale propagation and cryopreservation of tree elite genotypes, as well as for transformation strategies.
- It has been successfully applied to different in vitro protocols, in liquid or solid media, and with direct, indirect and secondary/recurrent embryogenesis.

Patent Status

Priority European patent application filed.

For further information, please contact

Marta García Del Barrio, Ph.D.

Centro de Investigaciones Biológicas Margarita Salas.

Deputy Vice-Presidency for Knowledge Transfer of CSIC

Tel.: 34 – 91 8373112 ext. 4255

E-mail: transferencia@cib.csic.es
comercializacion@csic.es