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Establishment and application of biotechnologies in *Camelina sativa*

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Double Haploid Plant Establishment of haploid technology in *Camelina sativa*.

Camelina sativa, a member of the Brassicaceae family, is a robust oilseed plant that has gained tremendous attention regarding its unique fatty acid profile and the capability of growing comparatively well under low-input conditions. The generation of doubled haploids is one of the most effective biotechnologies used in plant breeding, since populations of homozygous segregants can be obtained from hybrid plants in just one generation. Here, we report on the generation of doubled haploid *Camelina* plants taking advantage of the phenomenon that immature pollen at the late microspore stage can be triggered in vitro to undergo cell proliferation, embryonic development, and plant regeneration. The most important aspects of the culture method established thus far include a precise selection of flower buds containing pollen of the appropriate developmental stage, a comparatively low mineral content of the medium and the adjustment of water availability by addition of 22% polyethylene glycol. Callus and embryos were collected after one month of pollen culture. Upon further cultivation on regeneration medium followed by transfer to soil, vigorously flowering and fertile plants were obtained. This indicates that spontaneous duplication of the microspores' haploid genome had taken place at an early timepoint of pollen culture. Further experiments are being conducted to improve the efficiency of the method. A representative doubled haploid plant will be selected for whole-genome deep-sequencing in order to provide a new reference for which plant material will be available for the research community.

PLENARY TALKS

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