



Maize WOX2A Over-Expression Induces Somatic Embryo Formation

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Inventors: Heidi Kaeppler, Frank McFarland

The Invention

UW Madison researchers have identified a maize gene that stimulates somatic embryogenesis upon overexpression in plant cells. The researchers studied genetic locations in chromosomes of maize lines that respond to tissue culture condition. They did fine genetic mapping and additional analysis to identify a few candidate genes involved in embryogenesis. Subsequent studies linking this gene from two different maize lines to two different promoters (one very strong promoter and a weaker promoter) showed that strong overexpression of this gene converted a commercially relevant maize line, B73, that does not undergo somatic embryogenesis into a maize line that can regenerate through somatic embryogenesis. This modification makes B73 far more amenable to further genetic modifications. The gene the researchers identified as possessing this regeneration activity is Wuschel-Like Homeobox 2A (WOX2A). Corteva, a large agro-biotech company uses a related protein in combination with another protein as a means of causing somatic embryogenesis in plants that typically don't produce embryos in that way. According to the researchers, they have patents protecting that mixture and method. The inventors thought that overexpressing WOX2A at excessive levels could lead to tissue death, but they found that the strong promoter worked to induce embryogenesis whereas gene expression under the weaker promoter didn't affect the callus.

Tech Fields

- [Animals, Agriculture & Food : Plant biotech](#)

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