Commercialisation Opportunity

A method for the transformation of plant cells

Teagasc and University College Dublin are seeking partners within the ag-biotech industry to further develop a novel method of transforming plant cells with a view to licensing.

Summary

A novel method of transforming plant cells has been recently developed in Teagasc, Oak Park in collaboration with University College Dublin and a patent application filed. It was proven during experimental trials that this technology produces stable transformants at a rate equivalent to current systems when applied to potato, tobacco and the model plant Arabidopsis. This process would be of significant interest to companies working on the genetic transformation of plant species for agronomic, neutraceutical and/or pharmaceutical purposes, as current procedures for the transformation of plant cells are heavily restricted by existing patents.

Problem addressed

The primary technique for the generation of genetically modified (GM or 'biotech') crops utilises the bacteria *Agrobacterium tumefaciens* in a process termed *Agrobacterium tumefaciens*-mediated transformation (ATMT). ATMT is used worldwide by thousands of scientists in public-sector agencies and institutions, private industries (SMEs and international corporations) and universities. Yet, to the end-user of ATMT, adopting the technology for a specific task is problematic as the key patents for this technology have placed a stranglehold on transformation technology.

Solution

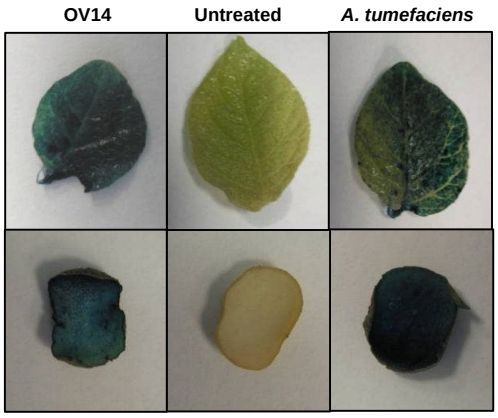
We have identified a novel bacterium (OV14) that will successfully transfer single/multiple gene(s) of interest into plant cells at rates equivalent to standard ATMT. By directly substituting OV14 for *Agrobacterium* in a standard ATMT transformation protocol, we have confirmed stable transgene integration and expression in the model species Arabidopsis and two crop species (potato and tobacco) at rates equivalent to that achieved with ATMT. OV14 is genetically distinct from Agrobacterium and as such circumvents existing transformation patents on dicotyledonous species. OV14 does not require challenging conditions or processes for its growth and the bacterium will willingly uptake plasmids of varying size.

Intellectual property status:

A patent application has been recently filed by Teagasc covering the process of isolating and characterising the potential of OV14 to genetically transform plant tissues.

Competitive advantage of technology

1. The key advantage of OV14 is that it is genetically distinct from Agrobacterium and as such circumvents existing transformation patents on plant species.
2. OV14 does not require challenging conditions or processes for its growth and can be integrated into existing ATMT-based protocols with no additional optimisations required.
3. OV14 will willingly uptake and harbour plasmids of varying size through multiple generations



Comparative transformation of potato leaf (upper) and tuber (lower) tissues with OV14 and *A. tumefaciens* as demonstrated with GUS staining. Blue GUS staining indicating the presence of transformed tissues.

Of interest to

This technology would be of interest to universities, public sector and small medium enterprises wishing to acquire a novel transformation platform for their gene discovery studies. As some validation and optimisation is still required we are currently seeking partners for such commercialisation with a view to licensing.

Principle investigators

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How to proceed

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