

**BACCALAUREAT GENERAL ET TECHNOLOGIQUE**  
**EPREUVE SPECIFIQUE MENTION**  
**« SECTION EUROPEENNE OU DE LANGUE ORIENTALE »**  
Académie de Nantes, binôme : Anglais/SVT

**THEME 2 – Enjeux planétaires et contemporains**  
**2B : La plante domestiquée**

**Farmers may have been accidentally making GMOs for millennia**

Use the three documents to:

1. Compare grafting and the techniques used in modern genetic engineering.
2. Show how grafting impacts biodiversity.

**Document 1:**

5 Grafting involves transplanting part of one plant onto another so they fuse and continue to grow. Farmers have been grafting plants for thousands of years to combine, say, a tree that bears delicious fruit with one that has disease-resistant roots. Grafting also occurs naturally, when branches press together.



<http://www.newscientist.com/article/2080039>, 2016

Farmers making grafts centuries ago, <http://www.newscientist.com/article/2080039>

**Document 2:**

5 Cells on either side of a graft can exchange chloroplasts – organelles that carry out photosynthesis and have their own small genome. [...] Another study found that the entire nucleus of a cell, containing the main genome, could be transferred across grafts. The transferred nucleus can be added to an existing cell nucleus – fusing the two genomes and potentially creating a new species.

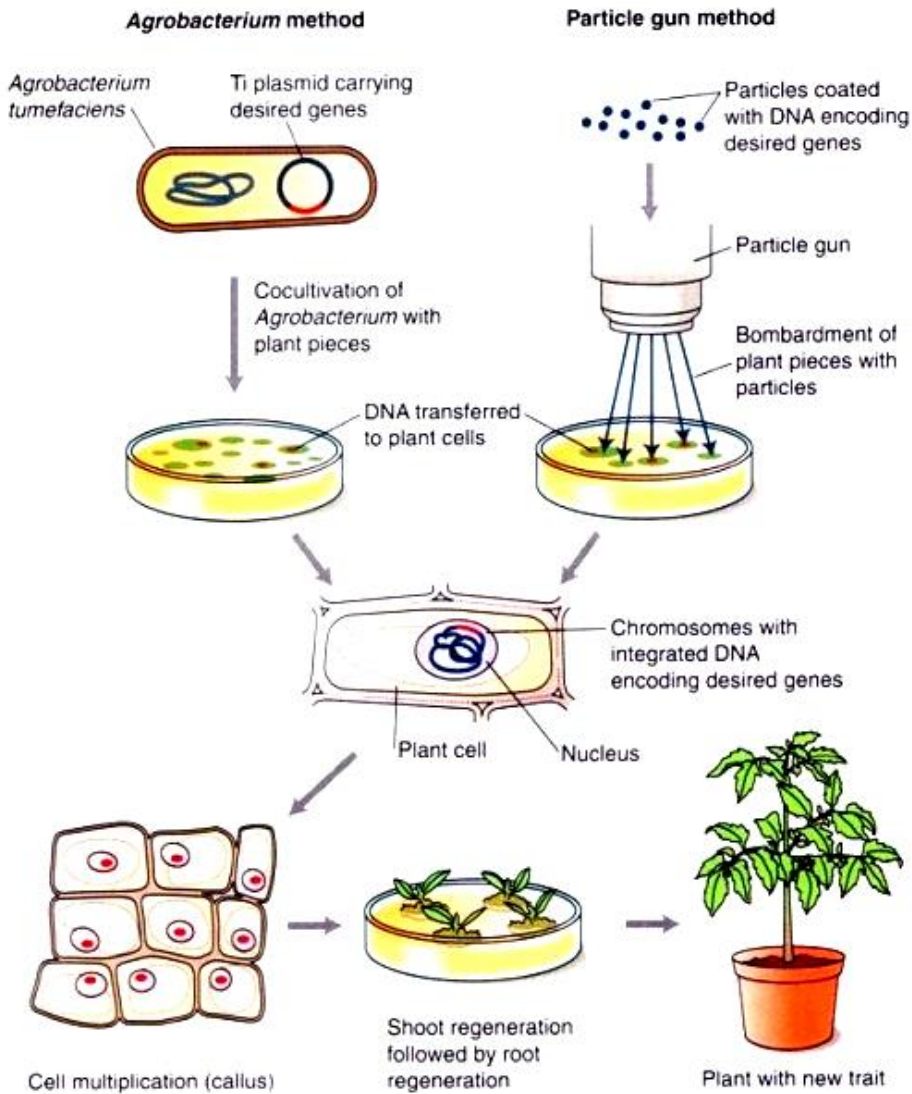
<http://www.newscientist.com/article/2080039>, 2016

Turn on the page →

**Document 3:**

Illustration of the process of transformation. This can be carried out through different methods such as infection using *Agrobacterium*, particle bombardment or microinjection.

Transformed cells are then selected, e.g. with the help of a marker gene, and regenerated into complete genetically engineered plants. The subsequent step is the further selection of the modified plants that contain the desired characteristics (both delicious fruits and disease-resistance roots traits).



(Delicious fruits and disease-resistant roots)  
[http://bch.cbd.int/cpb\\_art15/training](http://bch.cbd.int/cpb_art15/training)