

Plant Proteins Involved in *Agrobacterium*-Mediated Genetic Transformation

By Stanton B. Gelvin

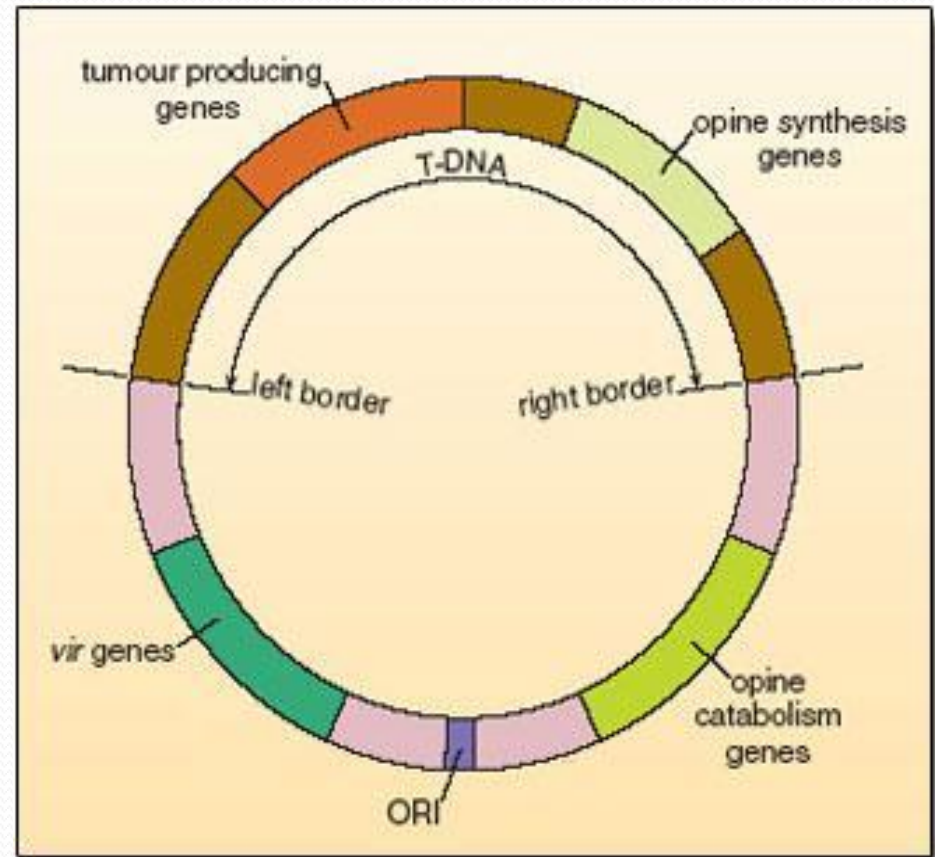
Presentation by **Nasie N. Constantino**

Steps Involved in Transformation

1. Recognition of susceptible plant cells
2. Induction of *vir* gene expression
3. Production of the T-strand
4. Formation of the T-complex
5. Transfer of the T-strand into the plant cell
6. Transfer of the T-strand through the plant cytoplasm and through the nuclear membrane
7. Integration into the plant nuclear genome
8. Gene expression

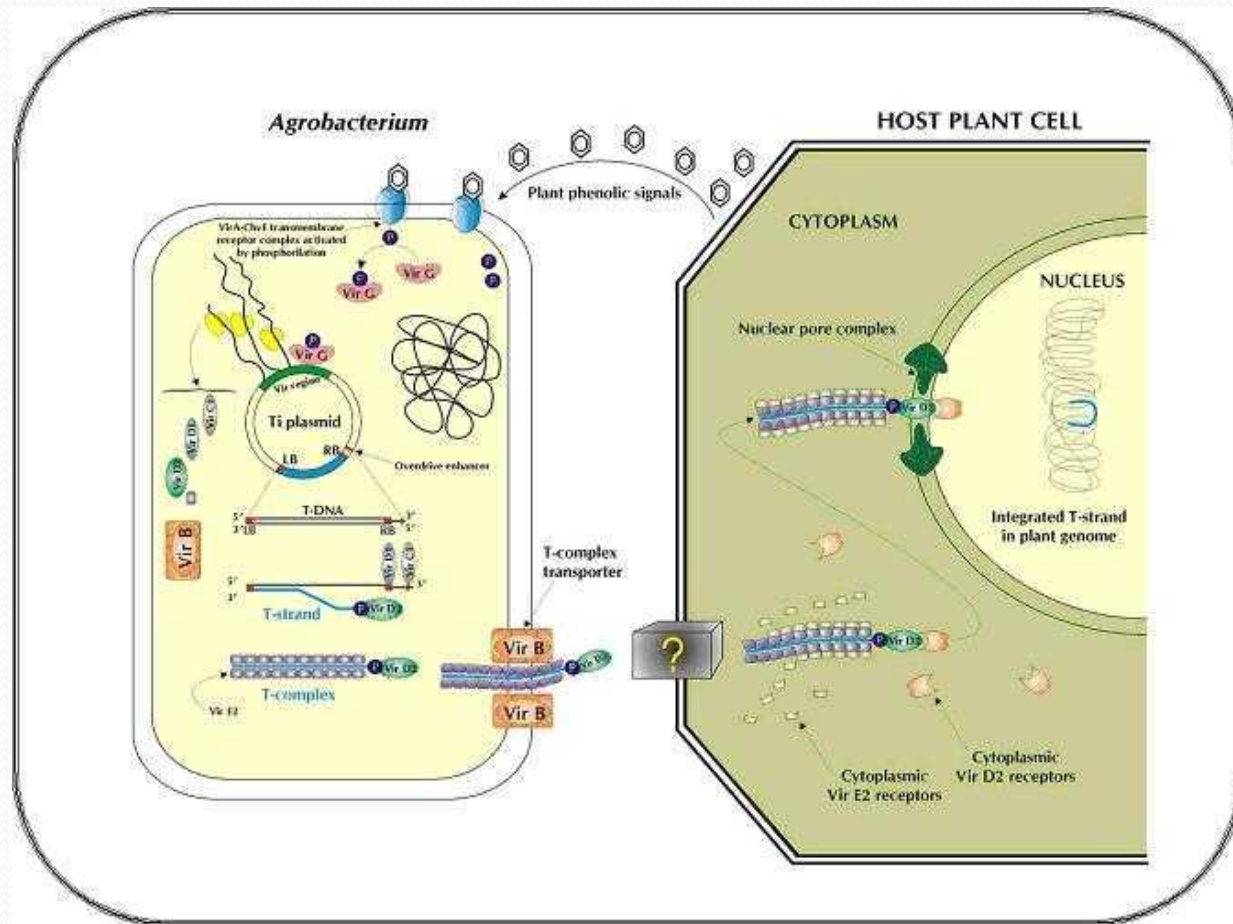
T-DNA

- Transferred as single stranded DNA
- The double stranded DNA is nicked at the right border
- Single stranded binding proteins will attach to the single stranded DNA
- DNA synthesis will displace the single strand and a second nick at the left border region will release the single stranded T-DNA fragment



<http://tsmbo8.cryst.bbk.ac.uk/notice/course/demoproject/bridges/images%20for%20project/Ti%20plasmid.jpg>

The Process



<http://research.cip.cgiar.org/confluence/download/attachments/3023/FIG3-BAC.JPG>

Sources

- Després, C., Chubak, C., Rochon, A., Clark, R., Bethune, T., Desveaux, D., and Fobert, P. R. (2003). The Arabidopsis NPR1 Disease Resistance Protein Is a Novel Cofactor That Confers Redox Regulation of DNA Binding Activity to the Basic Domain/Leucine Zipper Transcription Factor TGA1. *Plant Cell*, 15(9):2181-2191.
- Gelvin, S. B. (2003). *Agrobacterium*-Mediated Plant Transformation: the Biology behind the “Gene-Jockeying” Tool. *Microbiology and Molecular Biology Reviews*, 67(1): 16-37
- Gelvin, S. B. (2010). Plant Proteins Involved in *Agrobacterium*-Mediated Genetic Transformation. *Annual Review of Phytopathology*, 48: 45-68.