# Gene insertion into plants through the use of the Agrobacterium tumefaciens bacteria

Animation text:

Agrobacteria are found in soil. They can migrate towards a wound in the plant and create tumor-like growths that are called galls.

A naturally found plasmid called pTi (tumor inducing plasmid) enables these bacteria to turn these cells into tumorigenic cells.

Two important sites on the plasmid are the T-DNA site, which is the part of the plasmid that is transferred to the host plant (T is for transfer) and the VIR (virulence) site, which is needed for the penetration of the T-DNA into the plant.

The genes in the VIR region encode for the proteins that the T-DNA needs in order to penetrate the plant cell.

After the T-DNA is integrated into the plant genome, it induces the cell to express proteins whose function is to produce certain plant hormones and certain food substances that are needed for the development of the bacteria.

These plant hormones induce the cells to start replicating in an uncontrolled fashion, causing a tumorous growth or gall.

Today we use these qualities of the pTi plasmid to transmit recombinant DNA of our choice into the plant cells without causing unwanted tumorous growths.