

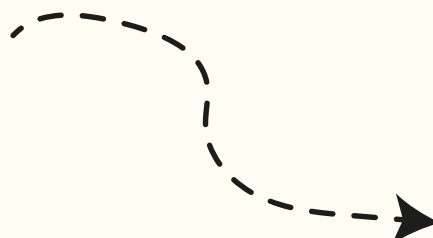
What is a

"natural GMO"?

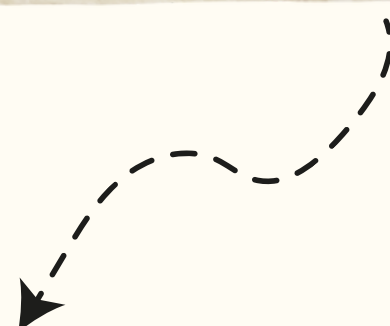
*And what does Prof. Marc Van Montagu have to do with it?*



The term "natural GMO" is not used in scientific discourse!



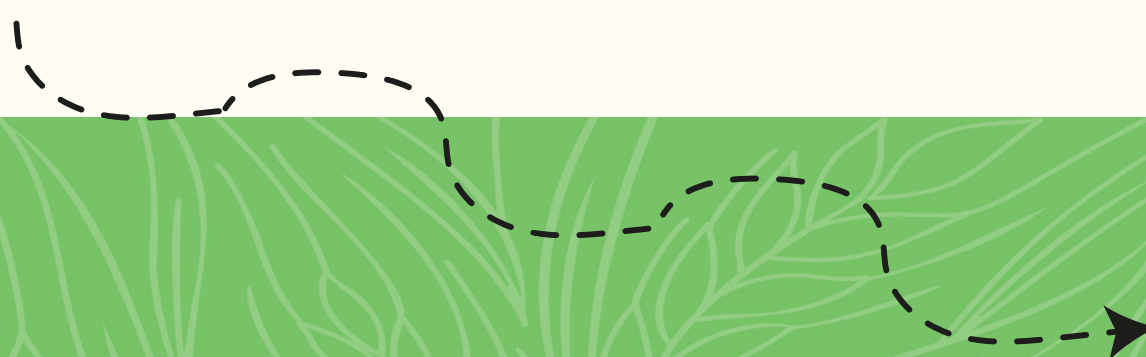
However, it can be used to describe organisms that experience **genetic modifications through natural processes - like horizontal gene transfer.**



Van Montagu, Jeff Schell and Mary-Dell Chilton have discovered

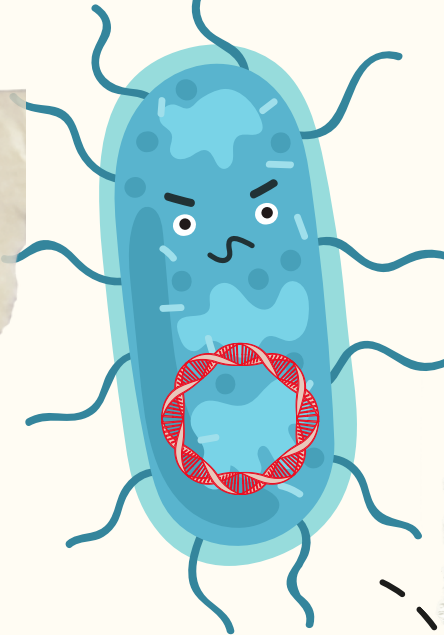


**how *Agrobacterium tumefaciens* transfers some of its genome into a plant, infecting it with a disease.**



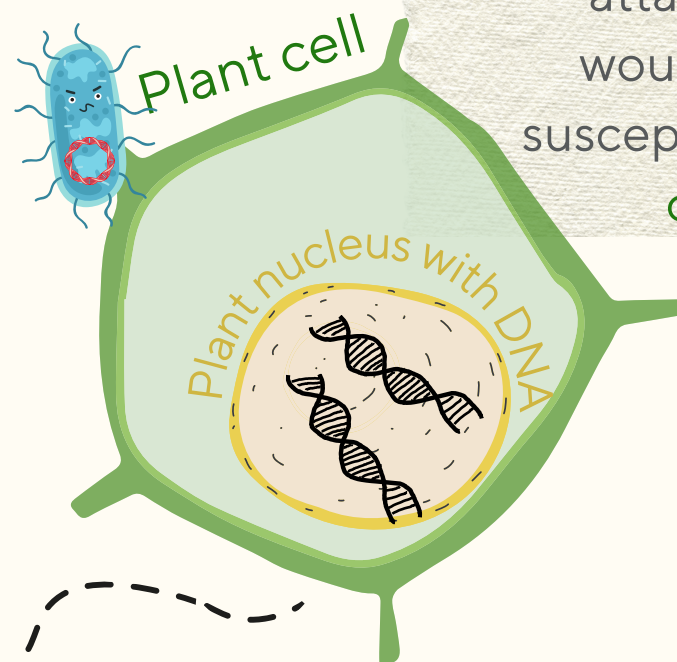


The scientists described the process of **horizontal gene transfer** somewhat like this:

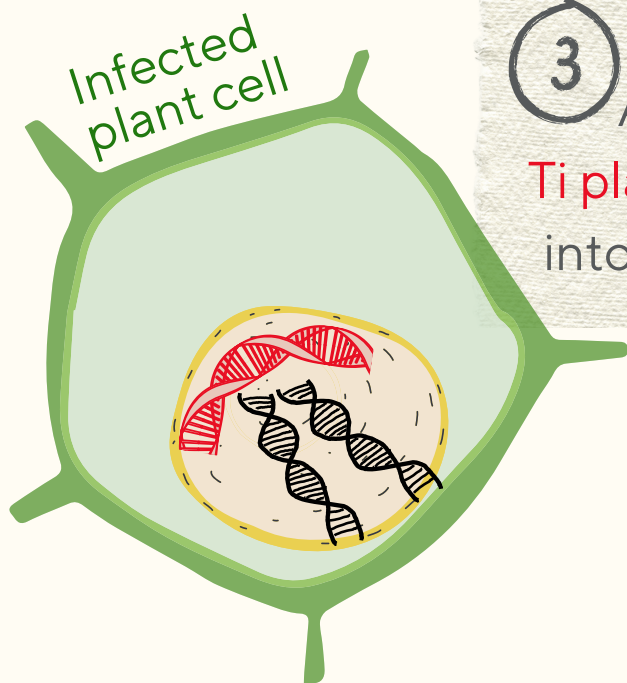


① *Agrobacterium tumefaciens* contains a region called **Tumor inducing plasmid (Ti)**

② *A. tumefaciens* attaches to wounded or susceptible **plant cells**



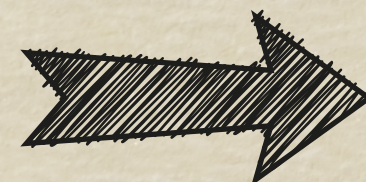
③ A part of the **Ti plasmid** integrates into **the plant DNA**



④ Tumor growth



**But why is this so important?**

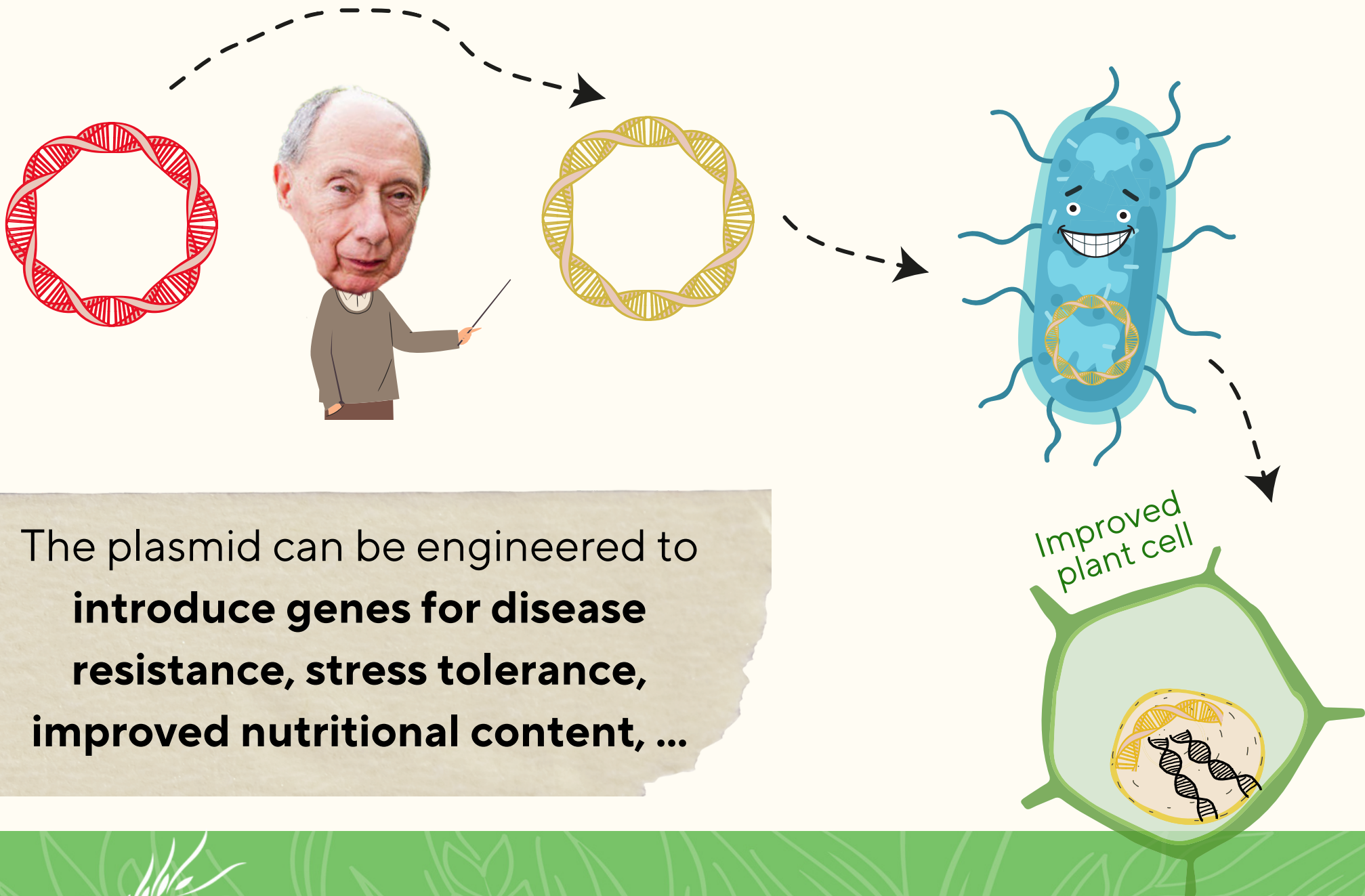




## Key finding:

A. tumefaciens is a natural vector (“transporter”) of genes!

Based on that, the scientists developed methods for **introducing beneficial foreign genes into plants.**

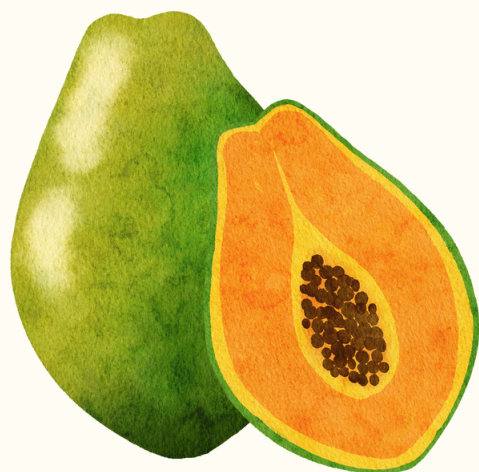


The plasmid can be engineered to **introduce genes for disease resistance, stress tolerance, improved nutritional content, ...**



These findings paved the way for the **development of genetically modified crops.**

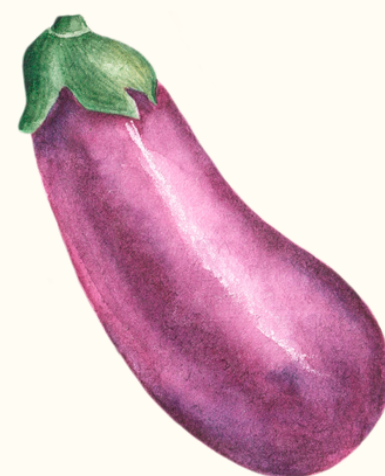
The agrobacterium-mediated gene transfer method has since been instrumental in enhancing many crops:



Ringspot virus resistant papaya



Pest resistant cotton



Insect resistant eggplant

*... and many more*



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