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Lacroix, B., T. Tzfira, A. Vainstein, and V. Citovsky, 2006, A Case of Promiscuity: *Agrobacterium's* Endless Hunt for New Partners, *Trends in Genetics*, 22, 29-37.

For decades, scientists recognized the link between large tumor-like growths on plants, called "crown galls," and the plant pathogen *Agrobacterium tumefaciens*. The crown gall disease develops when a segment of the bacterial transferred DNA (T-DNA), responsible for tumor production, is transferred into the plant cell and subsequently integrated into the plant genome. This process represents the only known natural case of DNA transfer between two different kingdoms, i.e. bacteria to eukaryotes. This transfer has, historically, been linked only to plants.

Increasing evidence indicates that, under laboratory conditions, the host range of *Agrobacterium* can be extended to numerous and diverse non-plant eukaryotic species, such as yeast and many other fungi, as well as human cultured cells. The new findings bring *Agrobacterium* to the center stage in the biotechnological and basic biological research realm. To date, research on this bacterium ranges from practical uses in genetic engineering, to representing an experimental system for fundamental cellular processes underlying genetic transformation, to understanding horizontal gene transfer as the driving force in evolution. In biotechnology of non-plant species, the most economically important use of *Agrobacterium* is the genetic transformation of different fungal species, such as genetically modified yeast cells, for industrial production of recombinant proteins utilized in medicine and other applications. In addition, better characterization of the natural ability of *Agrobacterium* to transform human cells may shed light on how *Agrobacterium*-based opportunistic infections impact immuno-compromised patients.

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