

## **An ancient event of Horizontal Gene Transfer (HGT) from *Agrobacterium* into sweetpotato and its wild relatives.**

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Horizontal Gene Transfer (HGT) is a potential creative force both in eukaryotic and prokaryotic genome evolution. In plants, HGT has been relatively well documented, and in most cases involves the transfer of genetic material from a plant-parasite to its host plant. Some examples of HGT from bacteria to plants include *Agrobacterium rhizogenes* and representatives of the genera *Nicotiana* and *Linaria*. Nevertheless, such findings have never been associated with domesticated edible crops until our discovery of *IbT-DNA1* and *IbTDNA2* sequences originating from *Agrobacterium spp.* inserted in the cultivated sweetpotato and its wild relatives. Here, we report that *IbT-DNA1* was found to contain at least four functional open reading frames (ORFs) homologous to *iaaM*, *iaaH*, *C-prot*, and *Acs* genes of *Agrobacterium spp.* It was detected in cultivated sweetpotatoes and in the wild relatives [*Ipomoea batatas* (L.) Lam (4x), *Ipomoea triloba*, *Ipomoea cordatriloba* and *Ipomoea tenuissima*]. *IbT-DNA2* contains at least five functional ORFs with significant homology to *ORF14*, *ORF17n*, *RoIB/RoIC*, *ORF13*, and *ORF18/ORF17n* genes of *A. rhizogenes*. It also occurs in cultivated sweetpotatoes and the wild relatives [*Ipomoea batatas* (L.) Lam (4x) and *Ipomoea trifida*]. The acquisition of these genes may have played a role in the domestication/evolution of this crop and could shed light on the evolutionary relationship between the cultivated sweetpotato and its wild ancestors.