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Identification of aphid and plant partners involved in the circulative transmission of *Turnip yellows virus* (TuYV, *Polerovirus*) and *Cucurbit aphid borne yellows virus* (CABYV, *Polerovirus*) or the in the non-persistent transmission of *Cauliflower mosaic virus* (CaMV, *Caulimovirus*) was conducted by yeast two hybrid screen of cDNA libraries prepared from whole aphids or aphid organs (digestive tubes, heads) or from phloem cells of *Arabidopsis thaliana*. Those libraries were screened with viral baits known to be implicated in the aphid transmission process.

To look for virus partners in the aphids, two different systems were assayed: the common yeast two hybrid system and the split ubiquitin system more appropriate to identify membranous virus-partners. While a few candidates were identified for poleroviruses, no CaMV partner has been found yet. The reasons of this lack of identification of candidates for CaMV will be discussed.

One candidate, the ALY protein, potentially binding TuYV in the aphid, was selected to perform the functional validation. This candidate was found several times during the different screens. Inhibition of expression of this protein in the aphid will be conducting by RNA interference and the effect on virus transmission will be evaluated. The results of these preliminary experiments will be presented.

Concerning the plant, four candidates have so far been identified by screening the companion cells cDNA library with CABYV structural proteins. All the proteins belong to multigenic families which consequently hinder functional analysis by using Arabidopsis Knock-Out (KO) mutants. We focused our work on one candidate, the ALY protein, already found as TuYV potential partner in the aphid and which possesses four orthologs in Arabidopsis (ALY1-4) able to bind virus structural proteins. These ALY proteins have already been found to bind P19 from *Tomato bushy stunt virus* (*Tombusvirus*), a suppressor of silencing. The role of ALY proteins in the virus cycle in Arabidopsis is addressed by following virus accumulation in Arabidopsis KO mutants. So far only the accumulation of TuYV in ALY1 Arabidopsis mutant has been assayed.

We present here the first identification of a protein present in both the aphid vector and the plant, which has the potential to bind virus structural proteins and could therefore play a function all along the virus cycle.