

**SHE** Poster presentation, Section 4.d.: Horticulture and biodiversity: contribution to its loss, conservation of increase – Pests, diseases

### **Interaction studies of *Cherry leaf roll virus* (CLRV)-encoded proteins involved in cell to cell movement in host plants**

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*Cherry leaf roll virus* (CLRV) is a worldwide distributed *Nepovirus* (family *Secoviridae*) that infects a wide range of herbaceous and woody plants. Hosts of horticultural importance include several ornamental plants, e.g. delphinium (*Delphinium* x), dogwood (*Cornus* spp.) or lilac (*Syringa vulgaris* L.), as well as fruit trees.

The virus is transmitted by seed and pollen. Systemic infection of a host plant including reproductive organs by the virus is achieved by cell to cell movement via plasmodesmata and long-distance transport through the vascular system. Members of the family *Secoviridae* are transported as virions, thus requiring the coat protein (CP). Further, the viral movement protein (MP) inducing tubular structures by multimerization within plasmodesmata is necessary for passage of virus particles to adjacent cells. In case of CLRV, virus-like particles (VLPs) have been observed within tubules in anther cells and in pollen grains of virus-infected birch and walnut (Massalski and Cooper, 1984). However, the underlying interactions of CLRV-CP and MP involved in cell to cell movement and gametophyte infection are not understood at the molecular level.

The yeast two-hybrid system (YTHS) was applied to investigate dimerization of the CLRV-movement protein (385 aa, 42 kDa) and its interaction with the viral coat protein (512 aa, 54 kDa). Additionally, the YTHS was used to examine specific binding of the CLRV-encoded proteins to a plant protein (At-4/1) facilitating intra- and intercellular trafficking (Paape, et al., 2006), which has been shown to interact with the tubuli-forming MP (NSm) of *Tomato spotted wilt virus* (TSWV).

Massalski, PR, Cooper, JI, 1984: The location of virus-like particles in the male gametophyte of birch, walnut and cherry naturally infected with cherry leaf roll virus and its relevance to vertical transmission of the virus. *Plant Pathology* 33, 255-262

Paape, M, Solovyev, AG, Erokhina, TN, Minina, EA, Schepetilnikov, AV, Lesemann, D-E, Schiemann, J, Morozov, SY, Kellmann, J-W, 2006: At-4/1, an Interactor of the Tomato spotted wilt virus Movement Protein, Belongs to a New Family of Plant Proteins Capable of Directed Intra- and Intercellular Trafficking. *Molecular Plant-Microbe Interactions* 19, 874-883