Robel J, von Bargen S, Bandte M, Büttner C, 2011:

Investigations of P4 protein of the *European mountain ash ringspot-associated virus* (EMARaV)

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The European mountain ash (*Sorbus aucuparia* L.) is a pioneer plant and widely spread in North and Central Europe. Since 1960 disease symptoms such as chlorotic ringspots and mottling on leaves of the European mountain ash are observed, which could be associated with the *European mountain ash ringspot-associated virus* (EMARaV). Particle morphology and sequence-based genome organization indicate phylogenetic relation to members of the family *Bunyaviridae* and to three unassigned RNA-viruses *Pigeon pea sterility mosaic virus* (PPSMV), *High Plains virus* (HPV) and *Fig mosaic-associated virus* (FMaV). EMARaV was assigned by the ICTV as the typspecies of the newly established genus *Emaravirus*.

EMARaV particles are assumed to be enveloped and comprise four negative orientated single stranded RNA molecules. So far functions of RNA1 to RNA3 (RdRP, glycoprotein precursor and nucleocapsid protein) could have been determined whereas the function of the RNA4-encoded P4 protein remains unknown.

EMARaV infects its host plant, the European mountain ash, systemically. During viral infections the movement of virus particles within and between cells is regulated through a movement protein, which resolves the size of the plasmodesma.

Currently no movement protein is characterized for EMARaV suggesting that the P4 protein is a potential movement protein.

Immunologically based studies with a P4-derived antibody are intended in order to localize and characterize the function of the P4 protein in plant cells. Furthermore, we aim to substantiate the mode of vector assisted transmission of EMARaV. Mielke-Ehret et al. (2010) postulated the pear leaf blister mite *Phytoptus pyri* as a vector for EMARaV transmission. The phylogenetic relations to the Bunyaviridae raise the possibility that EMARaV is transmitted by its vector in a circulative-propagative manner. The detection of the non-structural P4 protein in *Phytoptus pyri* would provide strong evidence towards a virus replication within the vector mite.