When a Palearctic bacterium meets a Nearctic insect vector: genetic and ecological insights into the emergence of the grapevine ‘*Candidatus* Phytoplasma vitis’ and ‘*Ca.* P. vitialni’ epidemics in Europe

Malembic-Maher S., Desque D., Khalil D., Salar P., Danet J.L., Duret S., Jović J., Krnjajić S., Angelini E., Luisa F., Ember I., Kolber M., Della Bartola M., Materazzi A., Maixner M., Beven L., Bouvery N. & **Foissac X** 1,2.

1 INRA, UMR 1332 Biologie du Fruit et Pathologie, Villenave d'Ornon, France,

2 Université de Bordeaux, UMR 1332 Biologie du Fruit et Pathologie, Villenave d'Ornon, France,

Since the first outbreaks, flavescence dorée epidemics had been associated to the introduction of the leafhopper vector *Scaphoideus titanus*,while Europe imported American phyloxera-resistant *Vitis* rootstocks. However, the geographical and ecological origin of the etiological agent, a phytoplasma, remained unclear despite evidences for a plant host-range not restricted to grapevine. We show in this article that this phytoplasma is endemic in European Alders and common in Clematis. Its emergence as an epidemic pathogen for grapevine is restricted to some genetic variants pre-existing in the wild plant host reservoir. The compatibility of this phytoplasma to the introduced *S. titanus* insect vector certainly resulted from the adaptation /compatibility of phytoplasma VMP to other insects living and gathering on perennial wild plant hosts. VMP organization is similar to adhesion related proteins (ARP) and allows the fast duplication of pre-adapted repeated domains. This suggests a key role of VMPs in the life-style of woody hosts phytoplasmas that rely on the adaptation to new insect vectors to expand their plant-host range.