Proposition for a Master 2 internship (January 2020 – June 2020)

**Laboratory and Institute:** GAFL – INRA Avignon
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**Profile of the internship:** Soybean, Arabidopsis, potyvirus, genetic resistances, CRISPR-Cas9, base editing,

**Brief description of the internship:**

*Soybean mosaic virus* (SMV) is a major concern in all areas where soybean (*Glycine max*) is grown and by the symptom associated with its infection, it can highly lower the yield and quality of soybean. We previously showed how the host translation initiation factors eIF4E are major susceptibility factors to potyviruses, and how genetic resistance strategies can be designed by editing the plant genes encoding those factors (Bastet et al., 2017, 2018 and 2019).

In the current project, the internship will focus on characterizing in soybean which of the 4E genes, encoded by a small multigene family, are hijacked by the SMV. For this, protein-protein interaction studies, as well as *in planta* overexpression approaches will be carried out. This will be performed in close collaboration with colleagues from Hokkaido University (Japan).

In parallel, the student will take part in the lab ongoing activities aiming at generating robust eIF4E resistance alleles by CRISPR-Cas9 base editing techniques.

Altogether, this work aims at generating durable genetic resistances in crops while maintaining the plant development and yield.