

Novel *Cydia pomonella* granulovirus isolates break virus resistance in codling moth

Jiangbin Fan^{1,2}, Jörg Wennmann¹, Dun Wang², Johannes A. Jehle¹

¹ Julius Kühn-Institut, Institute for Biological Control, Darmstadt

² Key Laboratory of Plant Protection Resources and Pest Management of Ministry of Education, Northwest A&F University, Yangling, China

Email of corresponding author: Johannes.jehle@julius-kuehn.de

Cydia pomonella granulovirus (CpGV) (family *Baculoviridae*) is an effective viral agent to control codling moth (CM, *Cydia pomonella* L.) populations in apple and pear plantations. Since 2005, resistance of CM field populations against CpGV products has been documented in more than 40 orchards and two different types of resistance of CM (sex-linked and autosomal inheritance) had been successively found in Europe. Most resistant CM populations can be controlled by newly registered, resistance breaking CpGV isolates but some resistant CM populations are still difficult to be controlled. Therefore, searching for other resistance breaking CpGV isolates is of urgent need.

We determined the efficacy of seven Chinese CpGV isolates on different CM laboratory strains, a sensitive and two

resistant CM strains, in bioassays. Among them, two isolates (CpGV-JQ, CpGV-ZY2) showed virulence comparable to already described CpGV isolates. Interestingly, two isolates (CpGV-ZY, CpGV-WW) were more infective to the autosomal inherited resistant CM strain than to the sex-linked resistant strain and differed in this regard from any previously recorded CpGV isolate. All isolates were sequenced using next generation sequencing and were grouped into previously reported CpGV genome types A to E. In depth genome sequence comparisons are going on to identify the genetic factors determining the CpGV virulence in different CM strains. These studies will allow us to unveil the partial resistance mechanism and point the way to improve novel strategies for resistance management.