Drosophila C Virus (DCV) and Cricket Paralysis Virus (CrPV) in *Drosophila*. By contrast, the other components of the pathway, including the regulatory subunit of the IKKβ kinase, NEMO, do not appear to play a role in the resistance to infection by these viruses. Among the genes regulated by IKKβ in virus-infected flies, we identified two genes involved in the resistance to viral infection. The first one is the homologue of the mammalian factor STING (Stimulator of Interferon Genes), and we could show that it acts upstream of IKKβ and Relish in a new signaling pathway (Fig. 2). The second one encodes a new antiviral factor, that we called Nazo (meaning "enigma" in Japanese) [3]. The STING-IKKβ -Relish signaling cassette controls inducible expression of Nazo in response to viral infection. *Nazo* results from a duplication of the gene *CG3740* in *Drosophila* species from the *Sophophora* subgenus. Of note, *CG3740* is not upregulated by viral infection, and ectopic expression of the gene has no effect on replication of DCV or CrPV, unlike expression of *Nazo*, which results in strong suppression of viral replication. The discovery of Nazo provides an excellent opportunity to decipher the genetics by which a cellular gene acquires a new function in antiviral immunity. Furthermore, the characterization of its mode of action against picorna-like viruses may reveal novel angles of attack against a family of viruses that include many serious human pathogens (e.g., poliovirus).

In summary, the fantastic diversity of insects extends to the viruses they carry, and to the genetic mechanisms they evolved to control these viruses. This biodiversity provides a unique opportunity to extend the repertoire of known antiviral mechanisms and to identify weak spots in the replication cycles of viruses.

Disclosure of interest The author declares that he has no competing interest.

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15

Cassava mealybug biological control delivers multi-faceted societal benefits

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As core component of sustainable intensification, biological control constitutes a tailor-made solution for the long-term management of both endemic and invasive pests. Here, drawing upon the example of the cassava mealybug (*Phenacoccus manihoti*; Hemiptera), we illuminate the myriad benefits of insect biological control.

In 2008, the above mealybug invaded Asia, where it inflicted a 27% drop in aggregate cassava production and triggered a 260% surge in starch prices. Mealybug-induced shocks in Thailand's cassava output were offset by a 300,000-ha expansion of the agricultural frontier–accompanied with major loss of intact tropical forest. Mealybug outbreaks were permanently resolved through the release of the neotropical wasp *Anagyrus lopezi* (Hymenoptera). This minute parasitoid effectively suppressed *P. manihoti* at a continent-wide scale, restored food security, and delivered pest control services worth US$ 200–700/ha. This same parasitic wasp had previously averted famine for ~ 20 million people in Africa. Our work emphasizes how beneficial (pest-controlling) insects help meet food production needs while benefiting farmers' pockets, global commodity trade, and the environment.

Disclosure of interest The author declares that he has no competing interest.

Further reading

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16

Insects and their microbial partners: The *Drosophila* case study

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Metazoans establish reciprocal interactions with their commensal bacterial communities. Despite recent progress, a clear view of the physiological benefits associated with host/microbiota relationship remains elusive. Hence the molecular mechanisms through which the microbiota exerts its beneficial influences are still largely undefined. In this line, we aim at deciphering the molecular dialogue governing the mutualistic interaction between intestinal bacteria and their host. To

Fig. 1 *Lactobacillus plantarum* (associated with blue food and feces) colonizes the host intestine (in both adults and larvae) and is transmitted vertically to progenies (note the contamination of an egg being laid) and promotes larval growth (note the size difference of *L. plantarum* associated individuals (larvae with blue intestine) vs. non colonized larvae (no blue in the intestine) when grown for six days on a low nutrient diet). © François Leulier.