

Technology Offer

RECOMBINANT DEFORMED WING VIRUS (DWV) VECTOR

Foreign gene expression, honey bee virus, compound screen, protein expression

Vetmeduni Vienna scientists have developed a DWV vector able to stably express foreign genes such as GFP. The transgenic DWV-GFP was used as a research tool to directly study the virus spread in bee cell culture and infected bees. The vector offers the possibility for the development of bee "vaccines" expressing single chain antibodies (scFv), miticide proteins or iRNAs against Varroa mites. The vector is also suitable as a production platform for recombinant proteins in bee pupae.

Technology

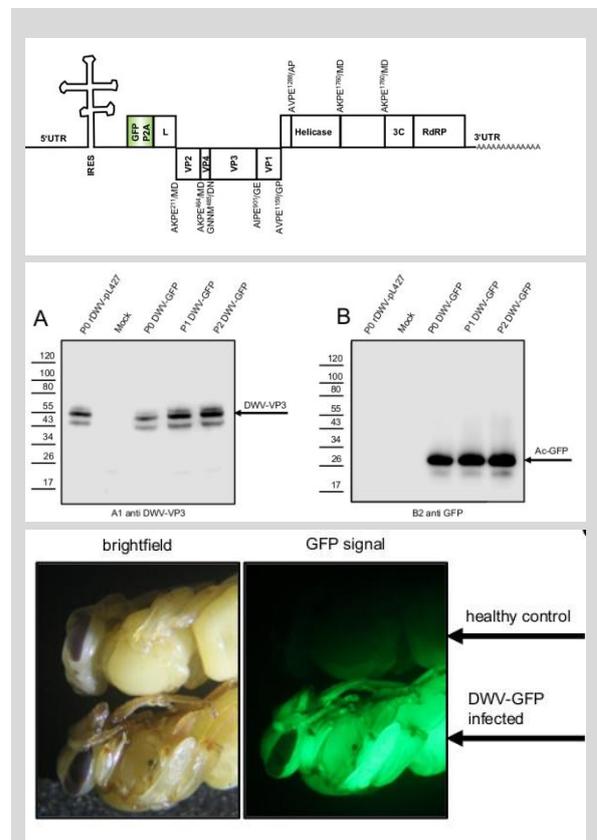
Research has identified several viral pathogens of honeybees that are transmitted by Varroa mites, including the deformed wing virus (DWV). The DWV is so called because the virus causes the appearance of honeybees with characteristic wing - - deformities together with other developmental defects such as abdominal stunting within bee colonies. Varroa mite infestation and accompanying DWV infections are the major cause for colony death in Europe and North America. Vetmeduni invention relates to a recombinant deformed wing virus (DWV) vector comprising a heterologous nucleotide sequence and its use for vaccination of honeybees. Additionally, bee cell cultures susceptible to DWV vector infection are also provided.

Applications

- Protein expression in honey bees
- Screen for therapeutic proteins
- Varroa mite treatment options
- Pest control in agriculture using other related Iflaviruses

Advantages

- Cheap production system
- Protein expression in managed insects
- Expression in the cytoplasm
- Easy access to honey bee pupae from commercial operations
- Protein expression from a +stranded RNAvirus genome
- Possibility to use the technics in other Iflaviruses (also pathogens of mosquitos and flies)



An insertion position at the N-terminus of the polyprotein allows an efficient expression of foreign proteins. The expression has been tested on honey bee pupae which can be easily obtained from beekeepers.

State of development

The GFP-DWV is only a model for what we can express with the system. It is planned to use this system to express commercially

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relevant proteins (e.g. scvF) and to further explore the use of this system to deliver therapeutically relevant substances.

Our researchers would be interested to start a research program for Varroa mite target identification for the development of miticide viruses.

References

<https://www.ncbi.nlm.nih.gov/pubmed/27828961>

IPR

Patent pending
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Options

R&D cooperation, License agreement, Sale

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Reference

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