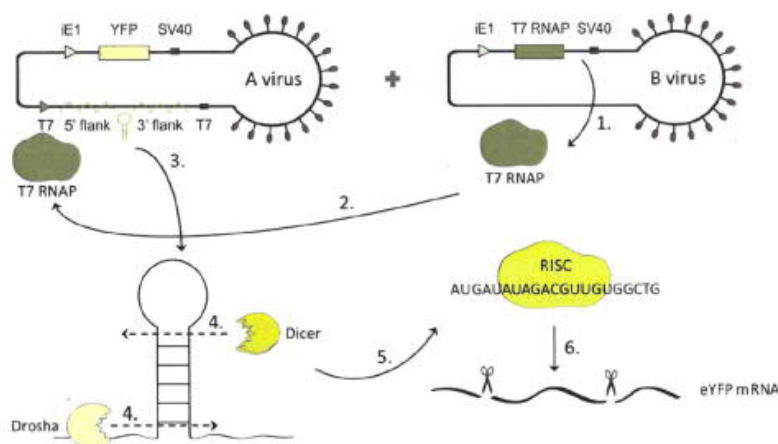


Expression of proteins via a two-vector based inducible system

protein expression, baculovirus expression system

DESCRIPTION OF TECHNOLOGY

Products, such as proteins, VLPs and other nanoparticles are often produced in insect cells using the baculovirus system. However, purification of the final product is difficult and requires several tedious steps, because the baculovirus particles are present as a DNA containing contaminant in the supernatant. Therefore, strategies have been tested to abolish baculovirus system secretion during the protein production process. Usually, a gene that is essential for virus budding, is deleted from the baculovirus genome, and a helper cell line providing the missing gene is generated, that allows propagation of this virus. However, these helper cell lines suffer from instability and poor virus production. Antisense-RNA based strategies have been established in insect cell, usually targeting cellular genes. Most of these approaches are not efficient. The technology requires cell specific polymerase 1 promoters for exact transcription of the guide RNA. For identification of such promoters, the whole genome sequence must be available.



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APPLICATION FIELDS

Application fields are in biotechnology medicine and pharma where high-quality proteins are used.

AT A GLANCE ...

Application Fields

- protein expression
- insect cell

Business

- Biotechnology
- Pharma, Medicine

USP

- improved production of high-quality protein based products such as proteins, VLP's and bio-nanoparticles
- Inducible expression in insect cells without the use of helper cell lines
- Suitable for downregulation of essential genes on the baculovirus genome
- Downregulation mechanism can be used in insect and mammalian cells
- Baculovirus free protein production

Development Status

- Proof of Concept

Patent Status

International patent application (PCT) filed on 13.09.2019.

ADVANTAGES OVER THE PRIOR ART

The invention provides a baculovirus based expression system for targeted downregulation of any gene on the baculovirus genome or the cellular genome. By antisense RNA or CRISPR/Cas9 technology, genes that are essential for baculovirus budding are being downregulated during the time of protein production. The downregulation mechanism is induced only when a combination of two different baculovirus species is present (dual vector system) and is regulated by the bacterial T7-System, which allows universal use in all insect cells as well as mammalian cells (no cell specific Polymerase 1 promotor required). The baculovirus species can be produced individually to high titers, only in combination, baculovirus production is hampered or abolished virus.

STATE OF THE PRODUCT DEVELOPMENT

Baculovirus free protein production as proof of concept.

COOPERATION OPPORTUNITIES

On behalf of University of Natural Resources and Life Sciences, Vienna TransMIT GmbH is looking for cooperation partners or licensees for distribution / further development in Germany, Europe, USA and Asia.

A TECHNOLOGY OF



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