Enhanced production of Papillomavirus-Like Particles with a modified Baculovirus expression system (P-835)

Keywords
- robust and reliable expression of various L1 VLPs
- high yield VLP production

Abstract
Cervical cancer is one of the most common cancers in women worldwide. The incidence of this cancer has been shown to correlate with infection with so-called high-risk HPV genotypes (HR-HPV). Recent studies have shown that new infection of young women by HR-HPV genotypes can be prevented by vaccinating with L1 protein derived from HR-HPV.

The HPV virus-like-particles (HPV-VLP) used as vaccines are produced using recombinant DNA technology either in baker’s yeast (Gardasil) or in an insect cell system (Cervarix). Unfortunately, for some papillomavirus types the production of VLPs in insect cell systems was found to produce rather low yield.

The current technology provides means and methods for the manufacturing of papillomavirus L1 VLPs with high yield by using a modified baculovirus (MultiBac) expression system in a host cell lacking L1 VLP hydrolysing protease activity.

Development Stage
The multibac system was successfully applied to produce VLPs of the following papillomaviruses: HPV 2, 3, 6, 10, 11, 18, 27, 57, 77 as well as BPV 5 and 6. The yield of VLPs was significantly higher for most of these PV types compared to the conventional baculovirus expression system.

The Technology
The Multibac expression system consists of a conventional baculovirus expressing system carrying the respective VLP in a polh- and p10- controlled cassette but lacking functional v-cathepsin.

Applications and Commercial Opportunity
Due to low yield, production of VLPs remains challenging for certain papillomavirus types. The employment of the MultiBac expression system permits substantially improved VLP production of several PV types. Applying baculovirus as vectors for recombinant protein expression has proven to be safe, easily manageable, and straightforward to scale up.

Inventors
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Intellectual Property
An international Patent Application is pending (priority April 03, 2009).

Further Information

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