

Technology Offer

Novel MVA mutant eliciting enhanced T cell memory

Reference Number
TO 01-00440

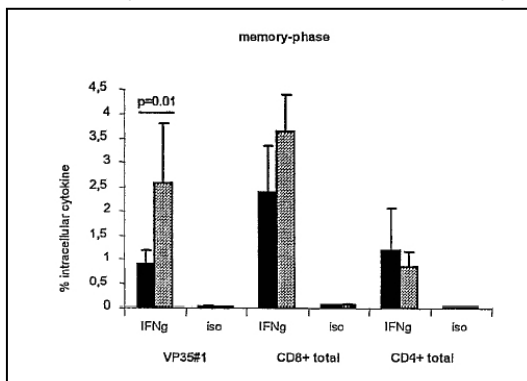
The Challenge

Absence of pathogenicity for humans, avirulence even in immunocompromised hosts, high-level expression of foreign antigens and strong adjuvant effect make recombinant MVA (rMVA) an ideal vector for both prophylactic and therapeutic vaccination. There are several ongoing clinical trials for rMVA-based vaccines, including prime-boost strategies.

Interleukin 1 β (IL1 β) is an important regulator of inflammatory responses and contributes to host immune defence against infection. MVA and other orthopoxviruses encode a viral soluble IL1 β -receptor (IL1 β R, MVA: ORF 184R), which modulates the acute-phase host response to infection and might influence the induction of immune responses against virus-associated antigens. Due to conflicting data from experiments after deletion of the IL1 β R gene in vaccinia virus, the role of MVA IL1 β R gene in modulation of MVA life cycle and host response to MVA is still unclear.

The Technology

At the GSF – National Research Center for Environment and Health the IL1 β R was deleted from the MVA genome. IL1 β R deficient MVA (MVA Δ IL1 β R) shows the same growth characteristics as wildtype (wt) MVA on chicken embryonic fibroblast cells. As shown by intra-nasal infection of mice with high doses of MVA Δ IL1 β R, the mutant virus is avirulent and safe as wt MVA. After vaccination of mice, MVA Δ IL1 β R or wt MVA induced similar acute-phase immune responses. Importantly, in the memory phase, MVA Δ IL1 β R elicits significantly higher MVA-specific total CD8⁺ and peptide epitope-specific T-cell responses. Moreover, 4–6 months after vaccination, MVA Δ IL1 β R provided higher levels of



Analysis of memory response in HHD mice. Source: WO 05/030971

Commercial Opportunity

MVA- Δ vIL1 β R induces high level T cell memory and can be used as efficient vector for vaccines against pathologic micro-organisms, viruses and tumours.

Patent situation

Patent applications are pending in AU, BR, CN, EP, IN, and US.

Further Reading

Staib et al. (2005), J. Gen. Virol. 86, 1997-2006.

Contact:

Dr. Hubert Mueller
Technology Manager
Ascension GmbH

T: +49 (0)89 318814-32
F: +49 (0)89 318814-20
E: mueller@ascension.de



Berlin
Braunschweig
Hamburg
Hannover
Munich

Ascension GmbH
Herzogstrasse 64
D-80803 Munich
Germany

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Foundation for the
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