

Technology Offer

Approved vaccination system based on MVA

Reference Number: TO 01-00645



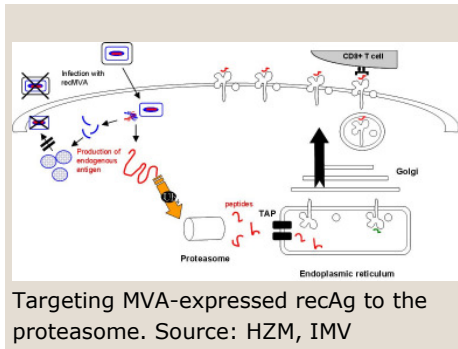
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Challenge

Recombinant vaccines based on modified vaccinia virus Ankara (MVA) have an excellent record concerning safety and immunogenicity and are currently being evaluated in numerous clinical studies for immunotherapy of infectious diseases and cancer.

Although MVA is regarded as being a valuable vector for expression of recombinant genes, it is widely accepted that upper limits for the administration of MVA to human beings are existing. This, however, may be disadvantageous in that the immune response generated by rMVA in this case may be insufficient in order to achieve the desired therapeutic effect. Thus, reducing the number of infectious units required to achieve a certain immune response would be highly desirable.

Technology



By examining immunogenicity *in vivo*, it surprisingly turned out that MVA vaccine containing an ubiquitinated antigen (human tyrosinase, MVA-Ub-Tyr) showed week primary response compared to MVA not containing ubiquitinated antigen, however, showed significantly enhanced secondary immune responses. A new approach to optimize the generation of CTL using rMVA vectors by producing antigens designed for rapid proteasomal degradation to enhance peptide processing for MHC class I-specific presentation is introduced. It could be confirmed that this combination led to overall enhanced immune responses and needed less

infectious units of rMVA to be administered.

Commercial Benefit

MVA vaccines delivering distinct formulations of antigen could be selectively used for priming or boosting which is highly important for the development of optimized MVA-based vaccination protocols with improved immunogenicity. In prime-boost vaccination studies, MVA-Ub-Tyr was able to most efficiently enhance Tyr-specific CTL recall responses, importantly already at low doses of vaccine applied.

Developmental Status

Various immunization experiments are ongoing and have already confirmed MVA containing ubiquitinated antigen (e.g. nef, her2/neu, tyr) to be superior in prime-boost strategies over conventional MVA vectors.

Patent Situation

Patent applications are pending in CA, CN, EP, IN, JP, and US.

Commercial Opportunity

The technology is available for exclusive and non-exclusive licensing. Parties interested in collaborative research and development are highly welcomed.

Further Reading

Gasteiger et al. (2007), J. Virol. 81, 11925-11936

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