

Evolution of vaccine resistant herpesviruses

Initiative: Lichtenberg - Professuren

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Projekt-Website: http://www.vetmed.fu-berlin.de/en/einrichtungen/institute/we05/02_mitarbeitende/aktuelle_mitarbeitende/kaufer_benedikt/

Vaccines are the centerpiece of protection of humans and animals against viral diseases. Although most antiviral vaccines elicit robust immune responses, many viruses are still able to infect and replicate in the host, which contributes to continuous pathogen evolution. One virus that steadily evolves and undermines vaccine protection is the highly oncogenic herpesvirus Marek's disease virus (MDV). MDV not only causes a devastating disease that severely impairs the health of chickens, but is also an excellent model for virus-induced cancer and viral evolution. In this project, the hypothesis will be tested that mutations in the major oncogene meq drive vaccine resistance and that imperfect vaccines force evolution of MDV towards increased virulence. Recombinant viruses will be generated harboring representative meq isoforms to investigate the contributions of these changes in meq to virus replication, virulence, oncogenic potential and vaccine resistance. To determine if vaccination results in selection of more virulent viruses, a genetically highly diverse MDV population will be generated and the selective pressure on the virus in the natural target cells will be analyzed. The selection and evolution of the viruses in vaccinated and unvaccinated animals will be investigated by characterizing newly evolving viruses genetically and phenotypically.

Projektbeteiligte

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Distinct polymorphisms in a single herpesvirus gene are capable of enhancing virulence and mediating vaccinal resistance

Overexpression of cellular telomerase RNA enhances virus-induced cancer formation.

Unraveling the role of B cells in the pathogenesis of an oncogenic avian herpesvirus

A Common Live-Attenuated Avian Herpesvirus Vaccine Expresses a Very Potent Oncogene

The Diverse Major Histocompatibility Complex Haplotypes of a Common Commercial Chicken Line and Their Effect on Marek's Disease Virus Pathogenesis and Tumorigenesis.

