A NATURAL RODENT MODEL SYSTEM FOR PAPILLOMAVIRUS (PV) - INDUCED CANCER

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HINTERGRUND

Papillomaviruses (PVs) are small, non-enveloped DNA viruses that are frequently found in animals, particularly in vertebrates such as mammals and birds. Different virus types infect epidermal or mucosal tissues and may cause diverse epithelial lesions ranging from papillomas to carcinoma.

The African multimammate rodent Mastomys coucha can be considered as an ideal model for PV-induced skin tumorigenesis. The Mastomys population at the German Cancer Research Center (DKFZ) is naturally infected with two distinct PVs: Mastomys natalensis papillomavirus (MnPV) which infects the skin and the recently isolated M. coucha papillomavirus 2 (McPV2), infecting the epithelium of the anogenital tract. As a consequence of virus infection, the animals spontaneously (within 12 month) develop multiple benign papillomas and keratoacanthomas of the skin as well as at anogenital regions.

LÖSUNG

The Mastomys mouse model provides the only existing natural laboratory model to investigate PV pathogenesis and the immunological setting during tumorigenesis in the skin, ear, eye and tongue as well as to develop prophylactic or therapeutic approaches to prevent those lesions.

VORTEILE

- A natural rodent model: immunocompetent and not transgenic
- Unique system to investigate PV-associated tumorigenesis (skin tumors and mucosal tumors)
- Useful for testing treatment strategies with compounds to inhibit warts and cancer

ANWENDUNGSBEREICHE

The inventors have developed a “virus-like particle” (VLP) based vaccine to
prevent PV-induced skin lesions. This vaccine is effective under normal and immunosuppressed conditions. Additionally, it is possible to use the rodent model system to test new compounds to inhibit wart formation and tumorigenesis. DKFZ is seeking for commercial partners and collaborations interested in using this unique model system.

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