

TECHNOLOGY OFFERS

A Natural Rodent Model System for Papillomavirus-Induced Cancer (P-1168)

The only existing natural laboratory model to investigate PV pathogenesis and the immunological setting during tumorigenesis

EXECUTIVE SUMMARY

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 Mastomys mouse model is the only existing natural laboratory model to investigate PV pathogenesis and tumor development in the skin, ear, eye and tongue and could help to develop prophylactic or therapeutic approaches to prevent those lesions.



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<https://pt.wikipedia.org/wiki/Ficheiro:Mastomys.jpg>

Category

Research Tools

Indication

PV-induced cancer

Development stage

Proof of concept

Seeking

Licensing, Commercial partner

BENEFITS

- 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

TECHNOLOGY BACKGROUND

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.

DEVELOPMENT STAGE

DKFZ is seeking for commercial partners and collaborations interested in using this unique model system.

APPLICATIONS

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.

INTELLECTUAL PROPERTY

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PUBLICATIONS & REFERENCES

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- Vinzón SE, Braspenning-Wesch I, Müller M, Geissler EK, Nindl I, Gröne H-J, et al. (2014) Protective Vaccination against Papillomavirus-Induced Skin Tumors under Immunocompetent and Immunosuppressive Conditions: A Preclinical Study Using a Natural Outbred Animal Model. *PLoS Pathog* 10(2): e1003924. <https://doi.org/10.1371/journal.ppat.1003924>

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ABOUT THE DKFZ INNOVATION MANAGEMENT

Working at the interface of research and industry, the Innovation Management of the German Cancer Research Center (DKFZ) helps to get new cancer medications, diagnostic tests, and research instruments onto the market as quickly as possible.

The DKFZ with its more than 3,000 employees is the largest biomedical research institution in Germany. At the Center more than 1,300 scientists investigate how cancer develops, identify cancer risk factors and endeavor to find new strategies to prevent people from getting cancer. They develop novel approaches to make tumor diagnosis more precise and treatment of cancer patients more successful. DKFZ is a member of the Helmholtz Association of National Research Centers, with ninety percent of its funding coming from the German Federal Ministry of Education and Research and the remaining ten percent from the State of Baden-Württemberg