Iotapapillomavirus

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Virion

Morphology	Icosahedral
Diameter (nm)	50
Structural Components	Capsid
Buoyant Density (g/ml)	1.34
Buoyant Density Method	CsCl
Lipid Composition	No lipids

Genome

Strandedness	Double-stranded
Configuration	Circular
Segments	1
Size (kb)	7.7
G+C Content (%)	50.16
mRNA Transcripts	Unknown
Open Reading Frames	6
Additional Information	The exact transcription and splicing pattern is not yet determined

Replication

Entry Mechanism	Receptor-mediated endocytosis
Site of Transcription	Nucleus
Transcriptase	Cellular RNA polymerase II
Site of Genome Replication	Nucleus

Replicase	E1 and E2 involvement in replication, together with the cellular DNA polymerase
Replication Intermediate	Episomal replication, probably Cairns type
Site of Virion Assembly	Nucleus
Egress Mechanism	Desquamation of the epithelium
Additional Information	Virus persists in an episomal state

History

Year	Event	Reference
1973	Discovery of infectious keratoacanthomas of the epidermis in Mastomys natalensis	Burtscher HW et al (1973) Naturwissenschaften 60(4):209-210
1978	Isolation of Mastomys natalensis papillomavirus (MnPV)	Müller H, Gissmann LA (1978) J Gen Virol 41(2):315-23
1994	Characterization of MnPV	Tan CH et al (1994) Virology 198(2):534-541
2004	MnPV E6 favors the malignant progression of chemically induced tumors in transgenic mice	Helfrich I et al (2004) J Virol 78(9):4797-4805
2007	Identification of various organs as novel targets for MnPV infection	Nafz J et al (2007) J Gen Virol 88(10):2670-2678
2010	MnPV infections induce strong antibody responses against the major capsid protein L1	Schäfer MK et al (2010) J Virol Methods 163(2):216-221

Genus Members

Species (Abbreviation) - Synonyms (Abbreviation)	ICTV Status	Host Range
Iotapapillomavirus 1 - Mastomys natalensis papillomavirus (MnPV) - Rat papillomavirus	type species	Mastomys (African rat)
Iotapapillomavirus 2	approved	

Nucleotide Sequences

Genomic Region	Virus Species / Strain	Nucleotides	Accession Number	Reference
Total genome	Mastomys natalensis papillomavirus	7,687	UO 1834	Tan CH et al (1994) Virology 198(2):534-541

Proteins

	Molecular

Protein Name	Abbreviation	Amino Acids	Weight (kDa)	Time of Expression	Accession Number	Additional Information
DNA helicase	E1	787-2595	App. 72	Early	NP_042016	
DNA-binding protein	E2	2537-4165	App. 60	Early	NP_042017	Regulates viral transcription and DNA replication
Major capsid protein	L1	5701-7293	55	Late	NP_042019	Forms the pentameric assembly unit of the virus capsid
Minor capsid protein	L2	4248-5813	App. 60	Late	NP_042018	
Oncoprotein	E7	510-800	App. 12	Early	NP_042015	Favors the malignant progression of chemically induced tumors in transgenic mouse models

Biology

Cytopathic Effect	Virus Species / Strain	Permissive Cells	Tissue Tropism	Additional Information
Koilocytosis in vivo	Mastomys natalensis papillomavirus	No permissive lines available	Skin, forestomach, lung, colon	

Diseases

Disease Name	Virus Species / Strain	Affected Organisms	Disease Characteristics	Transmission Route / Vector	Treatment	Geographic Distribution
Benign skin tumors	Mastomys natalensis papillomavirus	Mastomys natalensis	Non-regressing papillomas and keratoacanthomas	Skin contact		

Diagnosis

Diagnosis Method	Virus Species / Strain	Sample Material	Detection Target	Reference
ELISA	Mastomys natalensis papillomavirus	Serum	Anti-viral antibodies	Schäfer MK et al (2010) J Virol Meth 163(2):216-221
PCR, Southern Blot	Mastomys natalensis papillomavirus	Tissue samples	Viral DNA	Nafz J et al (2007) J Gen Virol 88(Pt 10):2670-2678

Vaccine Strains

Vaccine Name	Backbone Virus Species / Strain	Attenuation Procedure	Additional Information	Reference
(none)			Only “virus-like particle” are available as potential vaccine	

Vectors

Vector Name	Backbone Virus Species / Strain	Application	Insertion Capacity (kb)	Additional Information	Reference
pUC19	Mastomys natalensis papillomavirus		7.7		Schäfer MK et al (2010) J Virol Meth 163(2):216-221

Key Literature

- Burtscher HW et al (1973) Naturwissenschaften 60(4):209-210
- Helfrich I et al (2004) J Virol 78(9):4797-4805
- Müller H, Gissmann LA (1978) J Gen Virol 41(2):315-323
- Nafz J et al (2007) J Gen Virol 88(10):2670-2678
- Schäfer MK et al (2010) J Virol Methods 163(2):216-221
- Tan Ch et al (1994) Virology 198(2):534-541