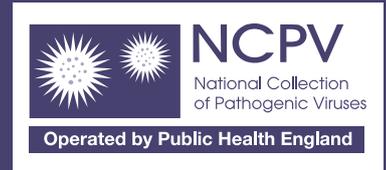


Arboviruses available from NCPV



Public Health England's National Collection of Pathogenic Viruses (NCPV) supplies hundreds of authenticated cultures and nucleic acids including examples of most of the common arbovirus species for research purposes.

Arthropod-borne viruses (arboviruses) are transmitted by biting arthropod vectors. The viruses are genetically diverse and are from several different virus families, including *Bunyaviridae*, *Togaviridae* and *Flaviviridae*. The arthropod vectors are also varied, predominantly mosquitoes and ticks, but also include sandflies, lice, mites and bedbugs. Several emerging and re-emerging neglected diseases and zoonoses (infections that can pass between animals and humans) are caused by arboviruses, with vaccines available for only a few of these infections. Disease incidence has grown dramatically around the world in recent decades, Dengue fever being the most common and responsible for 96 million cases worldwide every year.

Arboviruses occur globally, although the range of each species is restricted by the distribution of the vector. During the viraemic stage of disease, when viruses enter the bloodstream, transmission can also occur by blood product transfusions or in healthcare associated settings. Human behaviours such as travel and trade can have environmental impacts that expand the geographical ranges for the vectors and the viruses. Many arboviruses have RNA genomes, which means that they have a predisposition to gain mutations more rapidly, allowing them to evade intervention strategies, acquire new vectors and alter pathogenesis^{1,2}.

Authenticated viruses from NCPV are used for developing:

- Investigating virus infection cycles, transmission and pathogenesis studies
- Developing antivirals, therapeutics and vaccines
- Validating virus inactivation methods
- Establishing animal models to assist research and development
- Whole genome sequencing analysis
- Validating diagnostic and sero-surveillance methods
- Vector competency studies to test viral transmission to help predict regions at risk of becoming endemic



Togaviridae

Togaviridae is a family of enveloped viruses with linear non-segmented, single-stranded, positive-sense RNA genomes. Humans, mammals, birds, and mosquitoes serve as natural hosts. All arboviruses within this family lie within the *Alphavirus* genus.

Both live virus and nucleic acid formats are available for all viruses

Catalogue Number	Virus Name	Strain
0307063v	Bebaru virus	MM 2354
0704221v	Chikungunya virus*	
0811301v	Chikungunya virus*	D5523/06
0006254v	Chikungunya virus*	S27 Petersfield
0407041v	Eastern equine encephalitis virus*	H178/99
0906281v	Mayaro virus*	TC652
0101211v	O'Nyong-Nyong virus	Ahero
0005281v	Ross River virus	
1112041v	Semliki Forest virus	A774/C2/A
0007163v	Sindbis virus	EGAR 339
0605154v	Venezuelan equine encephalitis virus*	3880
0605159v	Venezuelan equine encephalitis virus*	78v
0605222v	Venezuelan equine encephalitis virus*	AG80
0605157v	Venezuelan equine encephalitis virus*	BeAn8
0605158v	Venezuelan equine encephalitis virus*	CaAr508
0605156v	Venezuelan equine encephalitis virus*	Fe37c
0605155v	Venezuelan equine encephalitis virus*	Mena II
0605153v	Venezuelan equine encephalitis virus*	P676
0605221v	Venezuelan equine encephalitis virus*	Pixuna
0605151v	Venezuelan equine encephalitis virus*	TC83
0605152v	Venezuelan equine encephalitis virus*	TrD
0407042v	Venezuelan equine encephalitis virus*	H12/93
1207081v	Western equine encephalitis virus*	
0407043v	Western equine encephalitis virus*	H160/99



Flaviviridae

The *Flaviviridae* is a family of small enveloped viruses with RNA genomes of 9000–13000 bases. Most infect mammals and birds. Many flaviviruses are host-specific and pathogenic. The majority of known members in the genus *Flavivirus* are arthropod borne, and many are important human and veterinary pathogens³.

Catalogue Number	Virus Name	Strain
0106032v	Dengue virus 1*	Hawaii A
0106037v	Dengue virus 1*	TC 861 (HA)
0106038v	Dengue virus 1*	TC 911
0411281v	Dengue virus 1*	TC974
0411283v	Dengue virus 3*	TC 3
0411282v	Dengue virus 3*	TC 999
0411285v	Dengue virus 4*	TC 1000
0802242v	Dengue virus 2*	R062
0006041v	Dengue virus 2*	New Guinea C
0006041v	Dengue virus 2*	New Guinea C
9911281v	Dengue virus 3*	H87
0411283v	Dengue virus 3*	TC 3
9910102v	Dengue virus 4*	H241
0411285v	Dengue virus 4*	TC 1000
0411284v	Dengue virus 4*	TC 25
0307064v	Israel turkey meningoencephalomyelitis virus	
9903141v	Japanese encephalitis virus*	Nakajama
0106036v	Japanese encephalitis virus*	TC 362
0307133v	Kadam virus	AMP 6040
0006253v	Murray Valley encephalitis virus*	
0007162v	St Louis encephalitis virus*	
0201139v	Tick-borne encephalitis virus*	Neudorfl
0005282v	Tick-borne encephalitis virus*	Vaccine strain
1105081v	Usutu virus	
0005072v	West Nile virus*	B956
0209292v	West Nile virus*	Dakar
0106034v	West Nile virus*	Egypt 101
0106035v	West Nile virus*	MB 1952
0106033v	West Nile virus*	MB1957
0209291v	West Nile virus*	NY99
0006042v	Yellow Fever virus*	French Neurotropic
0006251v	Yellow Fever virus*	17D
1308258v	Zika virus	MP1751
1604131v	Zika virus	PRVABC59
0006251v	Zika virus	PHe_Semen_Guadeloupe

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Bunyaviridae

In 2017 the International Committee on Taxonomy of Viruses reclassified the *Bunyaviridae* family, creating a new order *Bunyavirales*. This contains 9 families and 13 genera. Enveloped virions contain segmented negative-sense RNA genomes. Many viruses within this order cause severe illnesses

Catalogue Number	Family	Genus	Virus Name	Strain
0710071v	<i>Phenuiviridae</i>	<i>Phlebovirus</i>	Arbia virus	
1011213v	<i>Peribunyaviridae</i>	<i>Orthobunyavirus</i>	Bunyamwera virus	
0408084v	<i>Nairoviridae</i>	<i>Orthonaïrovirus</i>	Hazara virus	
0005071v	<i>Peribunyaviridae</i>	<i>Orthobunyavirus</i>	La Crosse virus	
0401181v	<i>Peribunyaviridae</i>	<i>Orthobunyavirus</i>	Ngari virus	Garisa
1409261v	<i>Peribunyaviridae</i>	<i>Orthobunyavirus</i>	Oropouche virus	
1202191v	<i>Phenuiviridae</i>	<i>Phlebovirus</i>	Rift Valley fever virus	h85/09
0002131v	<i>Phenuiviridae</i>	<i>Phlebovirus</i>	Sandfly fever Naples virus	
0003053v	<i>Phenuiviridae</i>	<i>Phlebovirus</i>	Sandfly fever Sicilian virus	
1011218v	<i>Peribunyaviridae</i>	<i>Orthobunyavirus</i>	Tahnya virus	
0903291v	<i>Phenuiviridae</i>	<i>Phlebovirus</i>	Toscana virus	

Rhabdoviridae

Rhabdoviridae is a family of virus in the order *Mononegavirales*. Vertebrates, invertebrates and plants serve as natural hosts.

Catalogue Number	Virus Name	Strain
1011215v	Chandipura virus	
0809071v	Vesicular stomatitis virus*	Indiana

*Restricted product – conditions of supply apply.

If you would like to be informed when new strains become available (e.g. *Zika virus*, *Louping ill virus*, *Dugbe virus*), please sign up to hear our latest news:

www.phe-culturecollections.org.uk/signup

References

1. Liang G, Gao X and Gould EA (2015). Factors responsible for the emergence of arboviruses; strategies, challenges and limitations for their control. *Emerging Microbes & Infections* 4(3):e18.

2. World Health Organization. www.who.int/mediacentre/factsheets/fs117/en/
3. Simmonds et al (2017). ICTV Virus Taxonomy Profile: *Flaviviridae*. *J Gen Virol* 98:2-3.