

FAO World Reference Laboratory for Foot-and-Mouth Disease (WRLFMD)

Genotyping Report

FMDV serotype: O
Country: Hong Kong SAR
Year: 2018
Batch: WRLFMD/2019/00002
No. of sequences: 4
Report date: 11th February 2019
Report generated by: Nick Knowles
Report checked by: Jemma Wadsworth



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www: <http://www.wrlfmd.org/>

email: reporting@pirbright.ac.uk

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Virus sample name:	HKN/18/2018
Sender reference:	18-14154
Location of origin:	Sheung Shui Slaughterhouse, Sheung Shui, New Territories
Country of origin:	Hong Kong SAR
Date of collection:	27/09/2018
Host species:	porcine
Serotype:	O
Topotype:	CATHAY
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	1
Material submitted for sequencing:	LFBK1
Harvest date of material:	01/02/2019
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	07/02/2019
Created:	08/02/2019
Last updated:	08/02/2019
VIBASys IDs: sample 39693, genome 39694, sequence viba_39695, sequencing info 39696	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_37464	HKN/12/2018	porcine	99.5	0	O	CATHAY		
viba_39713	HKN/20/2018	porcine	99.5	1	O	CATHAY		
viba_37472	HKN/14/2018	porcine	99.5	0	O	CATHAY		
viba_39707	HKN/23/2018	porcine	99.4	0	O	CATHAY		
viba_37476	HKN/15/2018	porcine	99.4	0	O	CATHAY		
viba_39703	HKN/21/2018	porcine	99.2	0	O	CATHAY		
viba_36384	HKN/4/2018	porcine	98.9	0	O	CATHAY		
viba_37484	HKN/17/2018	porcine	98.7	0	O	CATHAY		
viba_37460	HKN/11/2018	porcine	98.6	0	O	CATHAY		
viba_37480	HKN/16/2018	porcine	98.6	0	O	CATHAY		

Most Closely Related Prototype Sequences

see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_418	PHI/7/96	porcine	87.2	0	O	CATHAY		
viba_480	Yunlin/TAW/97	porcine	86.9	0	O	CATHAY		
viba_584	HKN/6/83	bovine	85.3	2	O	CATHAY		
viba_325	HKN/21/70	porcine	82.1	2	O	CATHAY		
viba_50	UGA/17/98		79.2	0	O	EA-4		
viba_617	IND/53/79	bovine	79.1	0	O	ME-SA		
viba_850	NEP/1/2015	cattle	79.1	1	O	ME-SA	PanAsia-2	KAT-15
viba_221	MAL/1/98		78.9	0	O	EA-2		
viba_518	ISA/1/62		78.9	0	O	ISA-1		
viba_85	UGA/3/2002		78.8	0	O	EA-2		

Virus sample name:	HKN/20/2018
Sender reference:	18-14430
Location of origin:	Sheung Shui Slaughterhouse, Sheung Shui, New Territories
Country of origin:	Hong Kong SAR
Date of collection:	04/10/2018
Host species:	porcine
Serotype:	O
Topotype:	CATHAY
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	1
Material submitted for sequencing:	LFBK1
Harvest date of material:	01/02/2019
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	07/02/2019
Created:	08/02/2019
Last updated:	08/02/2019
VIBASys IDs: sample 39697, genome 39712, sequence viba_39713, sequencing info 39714	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_37464	HKN/12/2018	porcine	99.8	0	O	CATHAY		
viba_37472	HKN/14/2018	porcine	99.8	0	O	CATHAY		
viba_39707	HKN/23/2018	porcine	99.7	0	O	CATHAY		
viba_37476	HKN/15/2018	porcine	99.7	0	O	CATHAY		
viba_39695	HKN/18/2018	porcine	99.5	1	O	CATHAY		
viba_36384	HKN/4/2018	porcine	99.2	0	O	CATHAY		
viba_37484	HKN/17/2018	porcine	99.1	0	O	CATHAY		
viba_39703	HKN/21/2018	porcine	98.9	0	O	CATHAY		
viba_37460	HKN/11/2018	porcine	98.9	0	O	CATHAY		
viba_37480	HKN/16/2018	porcine	98.9	0	O	CATHAY		

Most Closely Related Prototype Sequences

see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_418	PHI/7/96	porcine	87.2	0	O	CATHAY		
viba_480	Yunlin/TAW/97	porcine	86.9	0	O	CATHAY		
viba_584	HKN/6/83	bovine	85.5	2	O	CATHAY		
viba_325	HKN/21/70	porcine	82.4	2	O	CATHAY		
viba_50	UGA/17/98		79.2	0	O	EA-4		
viba_617	IND/53/79	bovine	79.2	0	O	ME-SA		
viba_221	MAL/1/98		78.9	0	O	EA-2		
viba_85	UGA/3/2002		78.8	0	O	EA-2		
viba_850	NEP/1/2015	cattle	78.8	1	O	ME-SA	PanAsia-2	KAT-15
viba_518	ISA/1/62		78.6	0	O	ISA-1		

Virus sample name:	HKN/21/2018
Sender reference:	18-15031
Location of origin:	Sheung Shui Slaughterhouse, Sheung Shui, New Territories
Country of origin:	Hong Kong SAR
Date of collection:	18/10/2018
Host species:	porcine
Serotype:	O
Topotype:	CATHAY
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	RS2
Harvest date of material:	05/02/2019
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	07/02/2019
Created:	08/02/2019
Last updated:	08/02/2019
VIBASys IDs: sample 39701, genome 39702, sequence viba_39703, sequencing info 39704	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_39695	HKN/18/2018	porcine	99.2	1	O	CATHAY		
viba_37464	HKN/12/2018	porcine	98.9	0	O	CATHAY		
viba_39713	HKN/20/2018	porcine	98.9	1	O	CATHAY		
viba_37472	HKN/14/2018	porcine	98.9	0	O	CATHAY		
viba_39707	HKN/23/2018	porcine	98.7	0	O	CATHAY		
viba_37476	HKN/15/2018	porcine	98.7	0	O	CATHAY		
viba_36384	HKN/4/2018	porcine	98.3	0	O	CATHAY		
viba_37484	HKN/17/2018	porcine	98.1	0	O	CATHAY		
viba_37460	HKN/11/2018	porcine	97.9	0	O	CATHAY		
viba_37480	HKN/16/2018	porcine	97.9	0	O	CATHAY		

Most Closely Related Prototype Sequences

see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_418	PHI/7/96	porcine	86.8	0	O	CATHAY		
viba_480	Yunlin/TAW/97	porcine	86.5	0	O	CATHAY		
viba_584	HKN/6/83	bovine	84.9	2	O	CATHAY		
viba_325	HKN/21/70	porcine	81.9	2	O	CATHAY		
viba_50	UGA/17/98		79.2	0	O	EA-4		
viba_617	IND/53/79	bovine	79.1	0	O	ME-SA		
viba_221	MAL/1/98		78.9	0	O	EA-2		
viba_85	UGA/3/2002		78.8	0	O	EA-2		
viba_518	ISA/1/62		78.8	0	O	ISA-1		
viba_850	NEP/1/2015	cattle	78.8	1	O	ME-SA	PanAsia-2	KAT-15

Virus sample name:	HKN/23/2018
Sender reference:	18-17326
Location of origin:	Sheung Shui Slaughterhouse, Sheung Shui, New Territories
Country of origin:	Hong Kong SAR
Date of collection:	06/12/2018
Host species:	porcine
Serotype:	O
Topotype:	CATHAY
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	RS1
Harvest date of material:	02/02/2019
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	07/02/2019
Created:	08/02/2019
Last updated:	08/02/2019
VIBASys IDs: sample 39705, genome 39706, sequence viba_39707, sequencing info 39708	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_37464	HKN/12/2018	porcine	99.8	0	O	CATHAY		
viba_37472	HKN/14/2018	porcine	99.8	0	O	CATHAY		
viba_39713	HKN/20/2018	porcine	99.7	1	O	CATHAY		
viba_37476	HKN/15/2018	porcine	99.7	0	O	CATHAY		
viba_39695	HKN/18/2018	porcine	99.4	1	O	CATHAY		
viba_36384	HKN/4/2018	porcine	99.2	0	O	CATHAY		
viba_37484	HKN/17/2018	porcine	99.1	0	O	CATHAY		
viba_37460	HKN/11/2018	porcine	98.9	0	O	CATHAY		
viba_37480	HKN/16/2018	porcine	98.9	0	O	CATHAY		
viba_39703	HKN/21/2018	porcine	98.7	0	O	CATHAY		

Most Closely Related Prototype Sequences

see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_418	PHI/7/96	porcine	87.1	0	O	CATHAY		
viba_480	Yunlin/TAW/97	porcine	86.7	0	O	CATHAY		
viba_584	HKN/6/83	bovine	85.3	2	O	CATHAY		
viba_325	HKN/21/70	porcine	82.4	2	O	CATHAY		
viba_617	IND/53/79	bovine	79.2	0	O	ME-SA		
viba_50	UGA/17/98		79.0	0	O	EA-4		
viba_850	NEP/1/2015	cattle	78.9	1	O	ME-SA	PanAsia-2	KAT-15
viba_221	MAL/1/98		78.7	0	O	EA-2		
viba_85	UGA/3/2002		78.7	0	O	EA-2		
viba_238	ISA/8/83	bovine	78.6	0	O	ISA-1		

Report on FMDV O in Hong Kong SAR in 2018

Batch: WRLFMD/2019/00002



*, not a WRLFMD Reference Number

Analysis Parameters

VP1 subsequence extractor:	vp1_O
Query sequence set:	WRLFMD/2019/00002-Hong Kong SAR-O (4 sequences)
Sequence database set:	allseqs_O (4195 sequences)
Prototype sequence set:	!prototypes_O (49 sequences)
Number of related sequences reported:	10
Minimal VP1 subsequence match length	600
Sequence alignment method:	muscle (default parameters)
Sequence alignment length:	636
Phylogeny reconstruction method:	fdnadist, fneighbor
Number of bootstrap samples:	1000
Random seed for bootstrapping:	1
Displaying bootstrap values above:	70.0%
Number of sequences in tree capped at:	100
Number of prototype sequences in tree:	11
VIBASys version:	reflabs-1.1.2

Sequences in the Phylogenetic Tree

All sequences in the tree are in taxonomic group FMDV/O

label	accession	host(s)	lab	country	taxonomic information
HKN/21/2018	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/18/2018	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/20/2018	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/23/2018	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/12/2018	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/14/2018	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/15/2018	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/13/2018	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/16/2018	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/17/2018	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/11/2018	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/4/2018	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/12/2017	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/8/2017	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/6/2018	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/5/2018	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/11/2017	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/5/2017	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/3/2017	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/1/2017	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/4/2017	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/2/2016	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/7/2016	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/3/2016	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/5/2016	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/4/2016	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/6/2016	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/6/2015	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/7/2015	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/5/2015	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/9/2015	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/12/2015	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/8/2015	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/10/2015	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/1/2015	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/2/2015	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY

continued on next page

label	accession	host(s)	lab	country	taxonomic information
HKN/15/2014	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/11/2014	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/8/2014	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/7/2014	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/13/2014	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/4/2014	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/5/2014	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/6/2014	n/a	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/1/2013	KM243172	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/26/2010	KM243164	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/4/2011	KM243166	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/6/2011	KM243168	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/7/2011	KM243169	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/9/2011	KM243171	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/8/2011	KM243170	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/5/2011	KM243167	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/3/2011	KM243165	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/10/2004	DQ164887	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/14/2005	KM243133	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/17/2005	KM243135	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/18/2005	KM243136	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/19/2005	KM243137	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/20/2005	KM243138	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/9/2005	KM243129	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/6/2004	DQ164883	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/12/2004	DQ164889	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/12/2005	KM243132	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/9/2004	DQ164886	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/25/2005	KM243143	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/1/2006	KM243144	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/4/2006	KM243147	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/2/2006	KM243145	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/6/2006	KM243149	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/5/2006	KM243148	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/3/2006	KM243146	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/23/2005	KM243141	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/22/2005	KM243140	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/24/2005	KM243142	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/4/2007	KM243153	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/3/2007	KM243152	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/1/2009	KM243159	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/2/2009	KM243160	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/4/2008	KM243158	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/2/2008	KM243156	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/1/2008	KM243155	porcine	WRLFMD	Hong Kong SAR	CATHAY
HKN/3/2008	KM243157	porcine	WRLFMD	Hong Kong SAR	CATHAY
PHI/7/96	AJ294926	porcine	WRLFMD	Philippines	CATHAY
Yunlin/TAW/97*	AF308157	porcine	PIADC	Taiwan	CATHAY
PHI/12/95	KM243048	porcine	WRLFMD	Philippines	CATHAY
PHI/6/95	KM243044	porcine	WRLFMD	Philippines	CATHAY
PHI/2/94	KM243034	porcine	WRLFMD	Philippines	CATHAY
HKN/6/83	AJ294919	bovine	WRLFMD	Hong Kong SAR	CATHAY
HKN/21/70	AJ294911	porcine	WRLFMD	Hong Kong SAR	CATHAY
ISA/1/62	AJ303500	n/a	WRLFMD	Indonesia	ISA-1
ISA/8/83	AJ303503	bovine	WRLFMD	Indonesia	ISA-1
TAI/189/87*	KY091288	bovine	TRRL	Thailand	SEA
NEP/1/2015	n/a	cattle	WRLFMD	Nepal	ME-SA/PanAsia-2/KAT-15
IND/53/79	AF292107	bovine	PD-FMD	India	ME-SA
UGA/3/2002	DQ165077	n/a	WRLFMD	Uganda	EA-2
MAL/1/98	DQ165074	n/a	WRLFMD	Malawi	EA-2
UGA/17/98	HM211075	n/a	WRLFMD	Uganda	EA-4

*, not a WRLFMD Reference Number

n/a, not available