

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

## Genotyping Report

FMDV serotype: O  
Country: Malaysia  
Year: 2022  
Batch: WRLMEG/2022/00038  
No. of sequences: 1  
Report date: 17th October 2022  
Report generated by: Nick Knowles  
Report checked by: Don King

This report has been prepared on behalf of the Malaysian National Foot-and-Mouth Disease Laboratory (MNFMDL) and covers a VP1 sequence submitted to the WRLFMD on 17/10/2022.



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

email: [reporting@pirbright.ac.uk](mailto:reporting@pirbright.ac.uk)

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Virus sample name:	MAY/498/2022
Sender reference:	4982022_ii
Location of origin:	No. 4, Blok 1, Felda Lui Timur Serting Hilir, Jempol, Negeri Sembilan
Country of origin:	Malaysia
Date of collection:	2022
Host species:	cattle
Serotype:	O
Topotype:	ME-SA
Lineage:	Ind-2001
Sublineage:	e
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	n/a
Harvest date of material:	n/a
Primers:	n/a
Received for sequencing:	n/a
Created:	17/10/2022
Last updated:	17/10/2022
VIBASys IDs: sample 51609, genome 51610, sequence viba_51611, sequencing info 51612	

### Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_51144	TAI/2/2021	cattle	97.3	0	O	ME-SA	Ind-2001	e
viba_51203	ISA/DeliSerdang/A01220762/2022	cattle	97.2	0	O	ME-SA	Ind-2001	e
viba_51199	ISA/Langkat/A01220761/2022	cattle	97.2	0	O	ME-SA	Ind-2001	e
viba_51195	ISA/Tamiang/01220759-P10/2022	cattle	97.0	0	O	ME-SA	Ind-2001	e
viba_50617	PVT-SP10/ISA/2022	cattle	97.0	0	O	ME-SA	Ind-2001	e
viba_46431	IND/PD287/2015	cattle	96.8	0	O	ME-SA	Ind-2001	e
viba_51251	ISA/Mempawah/BBR11/2022	goat	96.8	0	O	ME-SA	Ind-2001	e
viba_50504	VL6-J-T/ISA/2022		96.8	0	O	ME-SA	Ind-2001	e
viba_51215	ISA/Mojokerto/PVT/2022	cattle	96.8	0	O	ME-SA	Ind-2001	e
viba_51291	ISA/HSU/A0522099-5/2022	goat	96.8	0	O	ME-SA	Ind-2001	e

### Most Closely Related Prototype Sequences

see <http://www.wrlfmd.org/fmdv-genome/fmd-prototype-strains>

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_30238	MUR/19/2016	cattle	96.2	0	O	ME-SA	Ind-2001	e
viba_293	BHU/3/2009	cattle	92.4	0	O	ME-SA	Ind-2001	d
viba_541	OMN/7/2001	bovine	92.1	0	O	ME-SA	Ind-2001	b
viba_705	KUW/3/97	bovine	91.5	0	O	ME-SA	Ind-2001	a
viba_397	UAE/4/2008	gazelle	89.9	0	O	ME-SA	Ind-2001	c
viba_766	IRN/31/2009	cattle	88.6	0	O	ME-SA	PanAsia-2	FAR-09
viba_354	PAK/16/2010	cattle	88.5	0	O	ME-SA	PanAsia-2	PUN-10
viba_650	IRN/8/2005	ovine	88.3	0	O	ME-SA	PanAsia-2	
viba_359	Manisa/TUR/69		88.2	0	O	ME-SA		
viba_285	UKG/35/2001	porcine	88.2	0	O	ME-SA	PanAsia	

Report on FMDV O in Malaysia in 2022

Batch: WRLMEG/2022/00038



\*, not a WRLFMD Reference Number

## Analysis Parameters

VP1 subsequence extractor: vp1\_O  
 Query sequence set: WRLMEG/2022/00038-Malaysia-O (1 sequences)  
 Sequence database set: allseqs\_O (5728 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: 10  
 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
MAY/498/2022*	n/a	cattle	MNFMDL	Malaysia	ME-SA/Ind-2001/e
TAI/30/21*	n/a	bovine	TRRL	Thailand	ME-SA/Ind-2001/e
MAY/1577/2021(6)*	n/a	cattle	MNFMDL	Malaysia	ME-SA/Ind-2001/e
MAY/1576/2021(3)*	n/a	cattle	MNFMDL	Malaysia	ME-SA/Ind-2001/e
MAY/1577/2021(1)*	n/a	cattle	MNFMDL	Malaysia	ME-SA/Ind-2001/e
TAI/2/2021	n/a	cattle	WRLFMD	Thailand	ME-SA/Ind-2001/e
PVT-SP10/ISA/2022*	n/a	cattle	Pusvetma	Indonesia	ME-SA/Ind-2001/e
ISA/Tamiang/01220759-P10/2022*	ON783874	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/Tamiang/01220759-P4/2022*	ON783873	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
PVT-SP4/ISA/2022*	n/a	cattle	Pusvetma	Indonesia	ME-SA/Ind-2001/e
ISA/Bantaeng/A07220112/2022*	n/a	n/a	PUSVETMA	Indonesia	ME-SA/Ind-2001/e
ISA/Bone/A07220116/2022*	n/a	n/a	PUSVETMA	Indonesia	ME-SA/Ind-2001/e
ISA/Gowa/A07220121/2022*	n/a	n/a	PUSVETMA	Indonesia	ME-SA/Ind-2001/e
ISA/Toraja_Utara/A07220106/2022*	n/a	n/a	PUSVETMA	Indonesia	ME-SA/Ind-2001/e
ISA/LTI/A06220466/2022*	ON854946	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/Semarang/A04222614/2022*	ON854955	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/Boyolali/A04222562/2022*	ON854942	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/Klaten/A04222596/2022*	ON854950	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/Malang/PVT/2022*	ON854941	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/Banjarnegara/A04222582/2022*	ON854949	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/Purbalingga/A04222607/2022*	ON854953	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/3/2022	n/a	cattle	WRLFMD	Indonesia	ME-SA/Ind-2001/e
ISA/Babel/PVT-AN/2022*	ON854939	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/Mojokerto/PVT/2022*	ON854938	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/KWB/A0522106/2022*	ON854948	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
PVT-S2AN/ISA/2022*	n/a	cattle	Pusvetma	Indonesia	ME-SA/Ind-2001/e
ISA/Pangkalpinang/PVT/2022*	ON854944	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
VL6-J-T/ISA/2022*	n/a	n/a	Pusvetma	Indonesia	ME-SA/Ind-2001/e
ISA/Jombang/PVTW-J11/2022*	ON854951	goat	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/6/2022	n/a	cattle	WRLFMD	Indonesia	ME-SA/Ind-2001/e
ISA/Probolinggo/PVT/2022*	ON854940	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/1/2022	n/a	cattle	WRLFMD	Indonesia	ME-SA/Ind-2001/e
ISA/Gresik/PVT-KBMS/2022*	ON854952	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
PVT-S234/ISA/2022*	n/a	cattle	Pusvetma	Indonesia	ME-SA/Ind-2001/e
ISA/Pemalang/A04222613/2022*	ON854954	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/Mempawah/BBR11/2022*	ON854947	goat	DICWY	Indonesia	ME-SA/Ind-2001/e

*continued on next page*

label	accession	host(s)	lab	country	taxonomic information
ISA/HSU/A0522099-5/2022*	ON854957	goat	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/Lamongan/PVT-VL6/2022*	ON854936	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/Pasuruan/A04222583/2022*	ON854943	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/Magetan/A04222620/2022*	ON854956	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/Sidoarjo/PVT/2022*	ON854937	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/DeliSerdang/A01220762/2022*	ON854935	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
ISA/Langkat/A01220761/2022*	ON854934	cattle	DICWY	Indonesia	ME-SA/Ind-2001/e
IND/PD247/2016*	MT909679	cattle	PD-FMD	India	ME-SA/Ind-2001/e
XJBC/CHA/2017*	KY696708	n/a	LVRI	China	ME-SA/Ind-2001/e
XJ/CHA/2017*	MF461724	cattle	LVRI	China	ME-SA/Ind-2001/e
BAN/GKa-236(pig)/2015*	KX712091	porcine	Univ Dhaka	Bangladesh	ME-SA/Ind-2001/e
IND/PD158/2015*	MT909634	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD159/2015*	MT909635	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD161/2015*	MT909637	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD287/2015*	MT909659	cattle	PD-FMD	India	ME-SA/Ind-2001/e
MUR/3/2016	MG972495	cattle	WRLFMD	Mauritius	ME-SA/Ind-2001/e
MUR/19/2016	MG972510	cattle	WRLFMD	Mauritius	ME-SA/Ind-2001/e
MUR/13/2016	MG972504	cattle	WRLFMD	Mauritius	ME-SA/Ind-2001/e
MUR/17/2016	MG972508	cattle	WRLFMD	Mauritius	ME-SA/Ind-2001/e
MUR/9/2016	MG972501	cattle	WRLFMD	Mauritius	ME-SA/Ind-2001/e
3B/MAUR/2016*	n/a	bovine	ANSES	Mauritius	ME-SA/Ind-2001/e
MUR/6/2016	MG972498	cattle	WRLFMD	Mauritius	ME-SA/Ind-2001/e
MUR/2/2016	MG972494	cattle	WRLFMD	Mauritius	ME-SA/Ind-2001/e
MUR/16/2016	MG972507	cattle	WRLFMD	Mauritius	ME-SA/Ind-2001/e
MUR/5/2016	MG972497	cattle	WRLFMD	Mauritius	ME-SA/Ind-2001/e
MUR/10/2016	MG972502	cattle	WRLFMD	Mauritius	ME-SA/Ind-2001/e
IND/PD119/2015*	MT909624	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD253/2015*	MT909653	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD127/2015*	MT909627	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD251/2015*	MT909652	cattle	PD-FMD	India	ME-SA/Ind-2001/e
BAN/LK/Sa-248/2015*	KY077612	cattle	Univ Dhaka	Bangladesh	ME-SA/Ind-2001/e
BAN/TG/Ba-268/2015*	KY077621	cattle	Univ Dhaka	Bangladesh	ME-SA/Ind-2001/e
IND/PD266/2015*	MT909655	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD392/2016*	MT909703	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD373/2016*	MT909702	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD281/2016*	MT909658	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD214/2016*	MT909675	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD203/2016*	MT909674	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD199/2016*	MT909673	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD198/2016*	MT909672	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD253/2016*	MT909681	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD252/2016*	MT909680	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD300/2016*	MT909687	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD233/2016*	MT909676	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD301/2016*	MT909688	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD297/2016*	MT909685	cattle	PD-FMD	India	ME-SA/Ind-2001/e
NEP/28/2015	KY449052	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/e
IND/PD246/2015*	MT909650	cattle	PD-FMD	India	ME-SA/Ind-2001/e
NEP/17/2015	KY449050	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/e
NEP/19/2015	KY449051	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/e
IND/PD244/2015*	MT909649	cattle	PD-FMD	India	ME-SA/Ind-2001/e
IND/PD243/2015*	MT909648	cattle	PD-FMD	India	ME-SA/Ind-2001/e
NEP/5/2016	KY449053	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/e
NEP/6/2016	KY449054	cattle	WRLFMD	Nepal	ME-SA/Ind-2001/e
BHU/3/2009	KM921814	cattle	WRLFMD	Bhutan	ME-SA/Ind-2001/d
UAE/4/2008	KM921876	gazelle	WRLFMD	United Arab Emirates	ME-SA/Ind-2001/c
OMN/7/2001	DQ164941	bovine	WRLFMD	Oman	ME-SA/Ind-2001/b
KUW/3/97	DQ164904	bovine	WRLFMD	Kuwait	ME-SA/Ind-2001/a
UKG/35/2001	AJ539141	porcine	PIADC	United Kingdom	ME-SA/PanAsia
PAK/16/2010	KY091285	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/PUN-10
IRN/31/2009	KY091284	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/FAR-09
IRN/8/2005	KY091281	ovine	WRLFMD	Iran	ME-SA/PanAsia-2
Manisa/TUR/69*	AY593823	n/a	PIADC	Turkey	ME-SA
TAI/189/87*	KY091288	bovine	TRRL	Thailand	SEA
ISA/1/62	AJ303500	n/a	WRLFMD	Indonesia	ISA-1

\*, not a WRLFMD Reference Number  
n/a, not available