



World Organisation  
for Animal Health  
Founded as OIE

# Technical supports on FMD control in China, 2021-2022

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# outline

- 1. Detection and analysis of field strains**
- 2. FMD Vaccine research and development**
- 3. Fundamental research on FMD**
- 4. Training courses and international meeting**

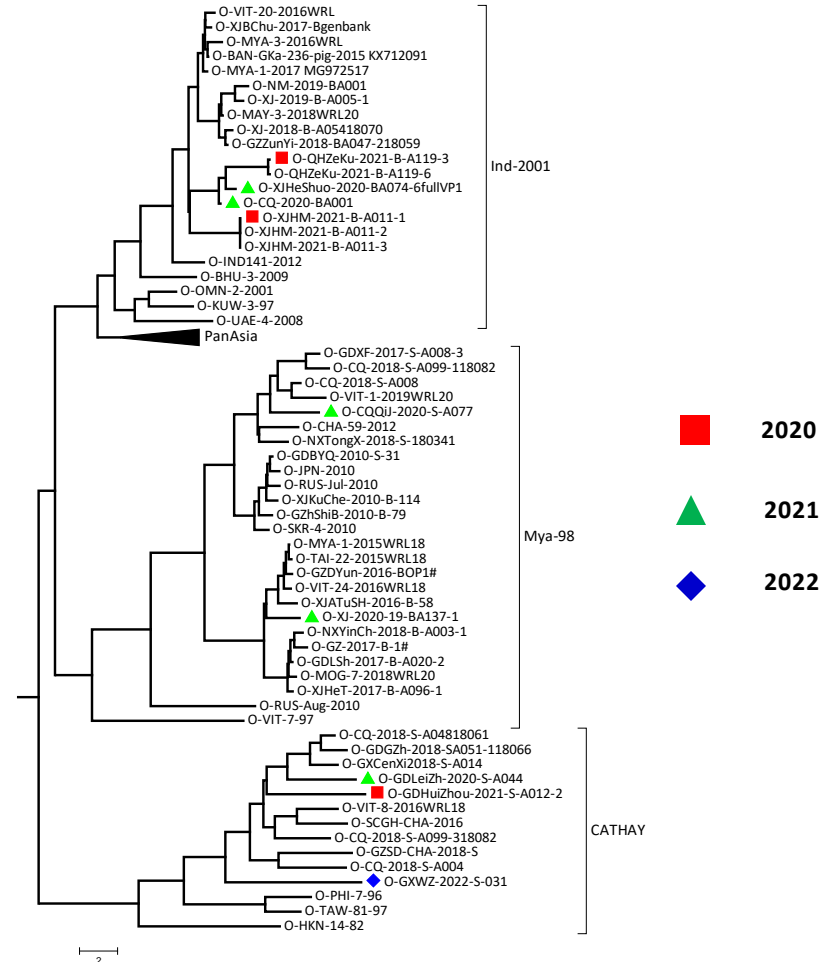
# 1. Detection and analysis of field FMDV strains

Year	Outbreaks	Animal infected	Provinces covered	Strains
2020	5	Cattle 3 Pig 2	XJ、 CQ、 GD	Ind-2001
				Mya-98
				CATHAY
2021	3	Cattle 2 Pig 1	XJ、 GD、 QH	Ind-2001
				CATHAY
2022 (Jan-Sep)	1	Pig 1	GX	CATHAY

General information on FMD strains collected in China, Jan 2020-Sep, 2022

# Genetic analysis of FMD strains

- Multiple strains (O/Ind-2001, O/CATHAY and O/Mya-98 ) are circulating in China
- Type A (Sea-97 strain ) is not detected since 2019
- O/Ind-2001 is still mainly circulating (esp in cattle)
- O/CATHAY is becoming another main strain in pigs
- O/Mya-98 is still circulating in pigs, though no cases reported since 2021

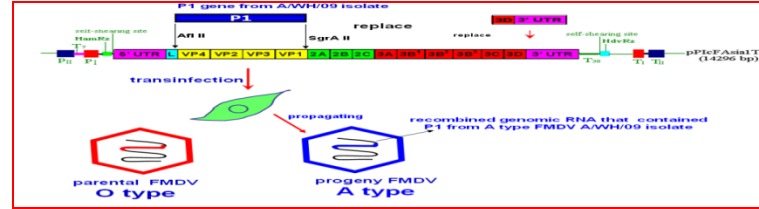
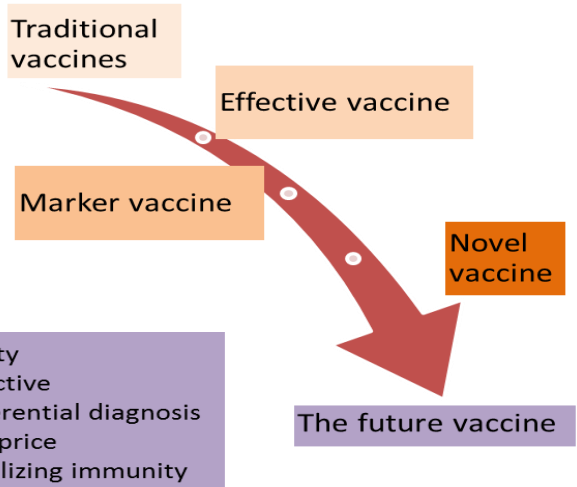


# Vaccine matching tests

Field isolate	Lineage	Animal	Vaccine strain	Vaccine strain
			O/BY/2010	Re-O/JSCZ/2013
2020-A136	Ind-2001	cattle	M	M
2021-008	Mya-98	pig	N	M
2021-A011	Ind-2001	cattle	M	M
2021-A052	CATHAY	pig	M	M
2021-021	CATHAY	pig	N	nd
2022-031	CATHAY	pig	N	N
				<b>M(Re-O/17002*)</b>

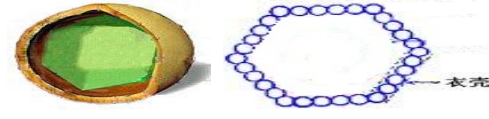
**\*Re-O/17002: new candidate vaccine strain**

# 2. FMD Vaccines research and development



Reverse genetic techniques on FMD vaccines

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VLPs/subunit vaccines

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Serotype	Locally produced vaccines
Type O	O/MYA98/BY/2010
	Re-O/Mya98
	O/HK/99
Type A	Re-A/WH/09
Asia1	Asia1/JSL/06(reserve)

Vaccine strains suitable for use in China

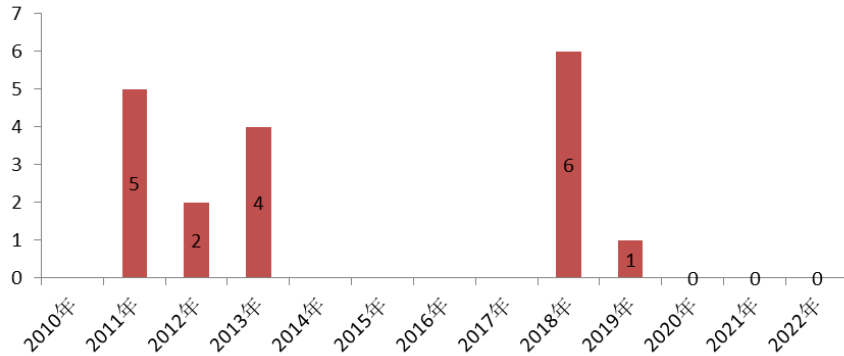


mucosal vaccine

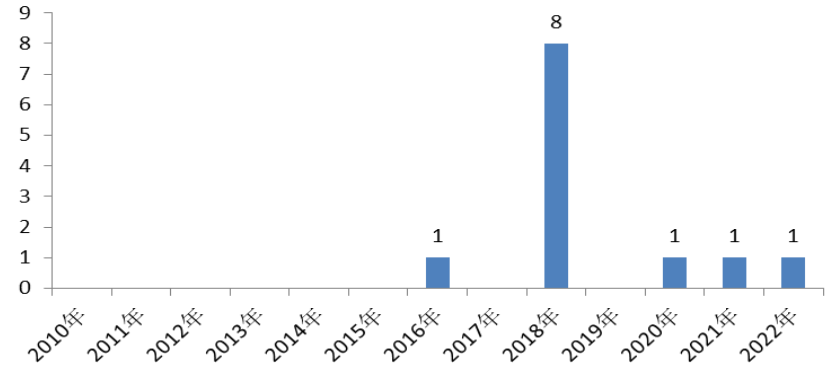
[panli@caas.cn](mailto:panli@caas.cn)

# 3. Fundantal research on FMD

### O/PanAsia in China



### O/CATHAY in China



#### Background:

O/PanAsia is mainly circulating in cattle. Rare cases are reported in pigs. Since 2019, PanAsia is not reported.

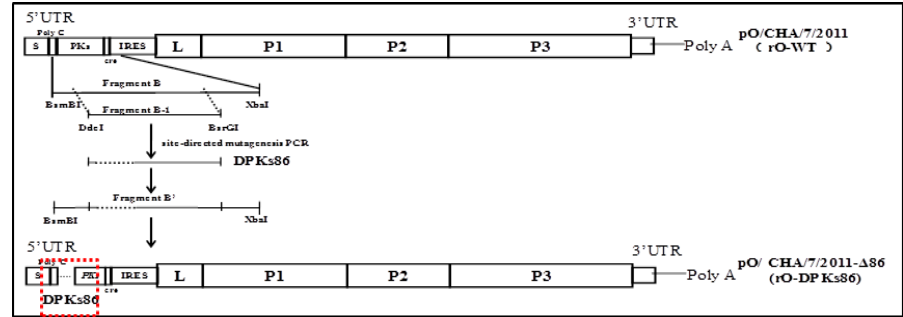
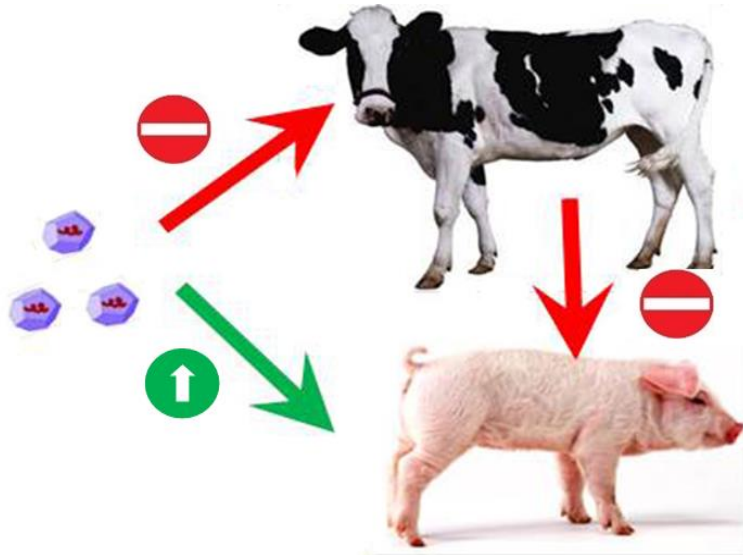
O/CATHAY is dominantly circulating in pigs and results in persistent outbreaks.

#### What are the causes?

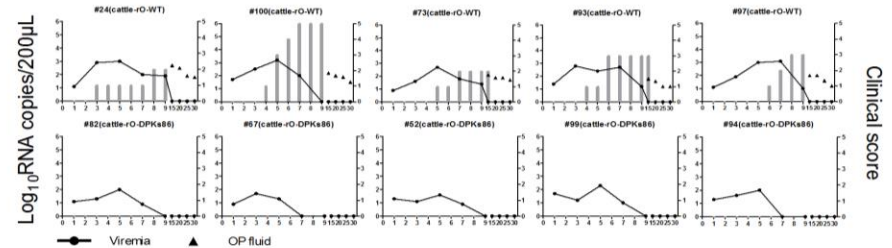
**Differences in infection, pathogenesis and host tropism?**

**Related to the PKs deletions?**

# 3. Fundantal research: deletions of PKs



Construction of recombinant FMDV harboring the 86-nt deletion



- PK region deletion occurred naturally in the FMDV genome.
- PK region is highly associated with viral host range and functions as a novel determinant for FMDV pathogenesis





# A story of O/CATHAY

- ✓ Circulating and spreading in Southeast Asia-China for a long time
- ✓ It is not well matched by commercial vaccine strains
- ✓ What are these causes?
- ✓ Could we
  - share samples/strains,
  - share genomic sequences,
  - share the information of vaccine matching test
  - Joint research
  - .....

# 4. Training courses and international meeting

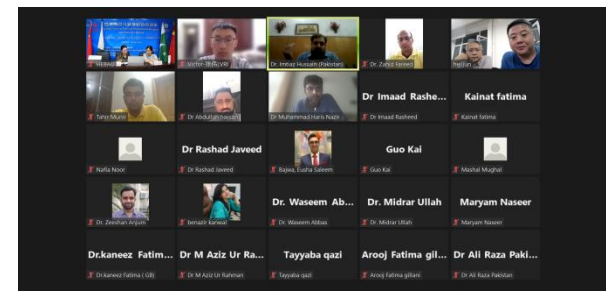
- International communication:
- 26<sup>th</sup> Meeting of the OIE Sub-Commission for Foot and Mouth Disease in South-East Asia, China and Mongolia (2022.3.17)
- The 3<sup>rd</sup> Regional Expert Group Meeting on FMD (2022.6.2)
- International training: Training Course on Food-and-Mouth Disease Prevention and Control for Pakistan, 8.24-9.13, 2022
- Country reports (3 times)
- Provincial training



International Training Workshop on Major TAD,  
10.11-10.22, 2021  
Lanzhou, China



Training Course on FMD Control in China, 2022



Training Course on Food-and-Mouth Disease Prevention and Control for Pakistan, 8.24-9.13, 2022

# Acknowledgment

- Husbandry and Veterinary Bureau , MARA China
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  - China national FMDRL
  - FMD Diagnosis Group
- SEACFMD
- WRL



**Thank you! 谢谢**