



# 12<sup>th</sup> SEACFMD Laboratory Network Meeting

4 – 5 November 2019

Pakchong, Thailand

## RRLSEA Pak-Chong Activity

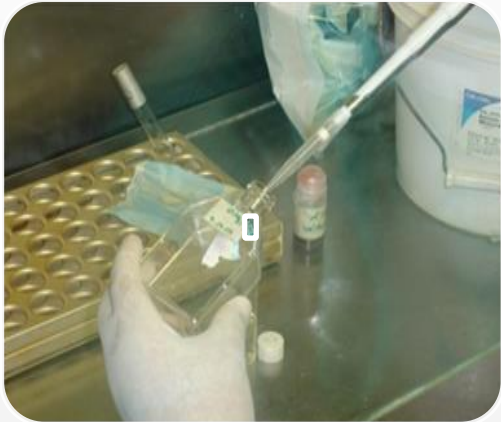
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for FMD in South East Asia NIAH ,DLD, Pakchong,  
Nakhonratchasima THAILAND

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REGIONAL REFERENCE LABORATORY FOR FMD IN SOUTH EAST ASIA (RRLSEA)  
PAKCHONG, NAKHONRATCHASIMA, THAILAND

# OUTLINE



Laboratory  
Diagnosis

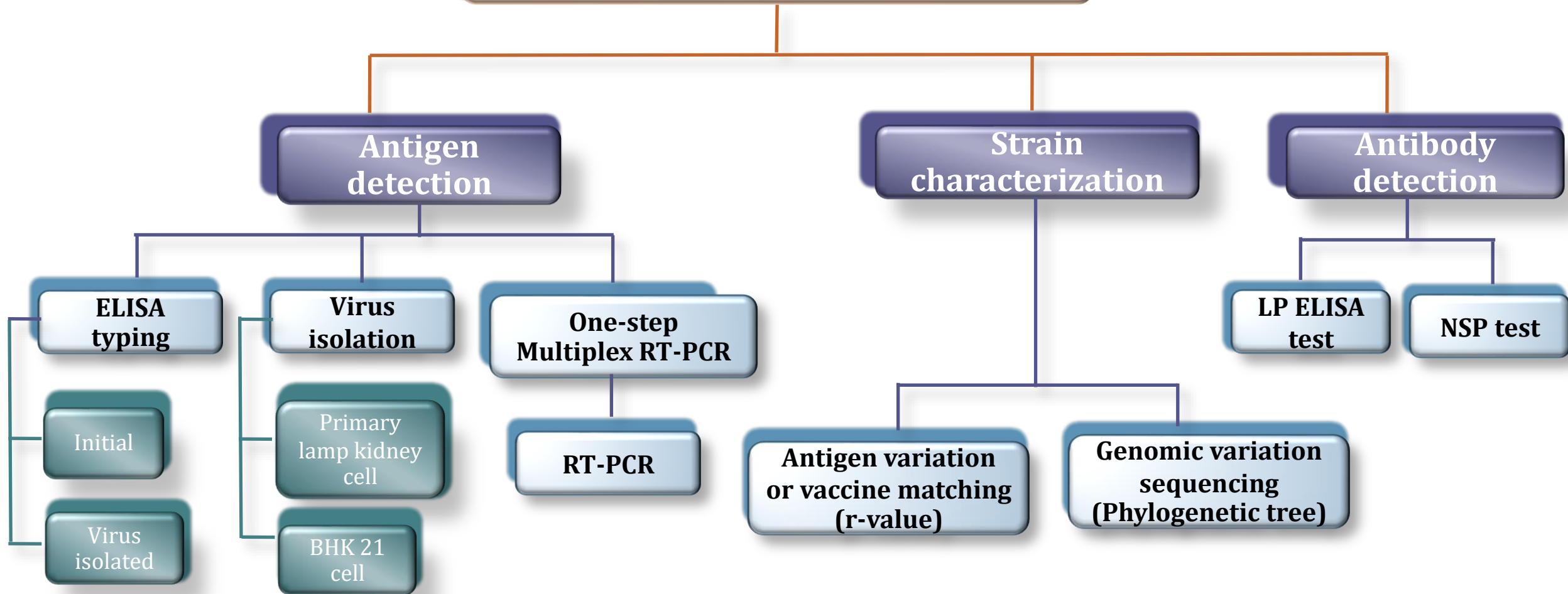
Quality  
Assurance  
Renovation

Training and  
Networking

Research  
Collaboration

# RRL Laboratory Diagnosis

## FMD Laboratory Diagnosis



# Laboratory Diagnosis

## ELISA typing in 2018-2019

Year	Country	No. of sample	ELISA typing results			
			0	A	Asia1	NVD
2018	Thailand	276	62	80	-	134
	Lao PDR	24	3	3	-	18
Year	Country	No. of sample	ELISA typing results			
			0	A	Asia1	NVD
2019 (Jan-Oct)	Thailand	180	34	115	-	31

# Laboratory Diagnosis

## Serum samples submission to RRL during 2019 (Jan-Oct)

Country	2019 (Jan - OCT)				
	LP ELISA	NSP s Test	NSPs Test		
			Positive	Negative	% Positive
Thailand	8,157	2,602	510	2,092	19.6%

# Laboratory Diagnosis

## Vaccine Matching Type 0 by LP ELISA

Year		n	0/189/87 Thai vaccine strain r-value		
			0-0.19	0.2-0.39	0.40-1.0
2018	Thailand	20	-	-	20
	Lao PDR	1	-	-	1

# Laboratory Diagnosis

## Vaccine Matching Type A by LP ELISA

Year	Country	n	A/Lopburi/2012			A/Sakolnakorn/97			A118/87		
			0-0.19	0.2-0.39	0.40-1.0	0-0.19	0.2-0.39	0.40-1.0	0-0.19	0.2-0.39	0.40-1.0
2018	Thailand	25	-	1	24	5	5	15	No binding reaction		
	LAO	3	-	-	3	-	-	3	No binding reaction		
Year	Country	n	A/Lopburi/2012			A/Sakolnakorn/97			A118/87		
			0-0.19	0.2-0.39	0.40-1.0	0-0.19	0.2-0.39	0.40-1.0	0-0.19	0.2-0.39	0.40-1.0
2019 (Jan-Oct)	Thailand	33	2	-	31	1	1	10	No binding reaction		

\* 2019; 22 samples were low binding reaction with A/Sakolnakorn/97

# Laboratory Diagnosis

## Nucleotide sequencing in SEA, 2018- 2019 (Jan –Oct)

Year	Country	RT-PCR		Real Time RT-PCR		Nucleotide Sequencing				
		Positive	Negative	Positive	Negative	Serotype O				Serotype A
						Mya-98, SEA	Ind-2001e, ME-SA	Pan Asia, ME-SA	Cathay	Sea-97, ASIA
2018	Thailand	272	123	324	86	+	+	+	-	+
	Lao PDR	8	25	17	16	-	-	+	-	+
	Malaysia Myanmar	-	-	-	-	-	+ *	-	-	-
	Vietnam	-	-	-	-	+ *	+ *	-	+ *	-
2019	Thailand	121	52	180	63	+	+	+	-	+
	Vietnam	-	-	-	-	+ *	-	-	-	-
	Laos	-	-	-	-	-	-	-	-	+ *
	Myanmar	-	-	-	-	+ *	-	-	-	-

\*Source: WRL, UK

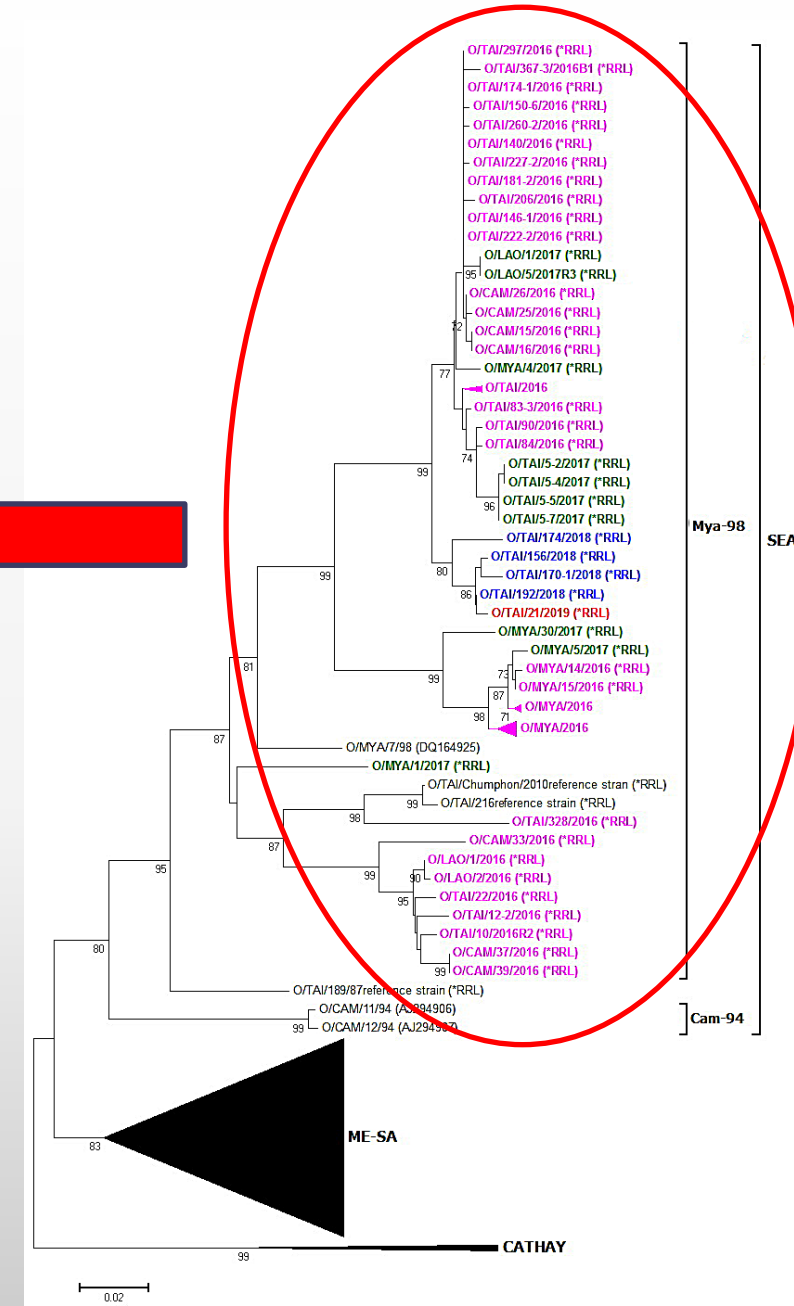
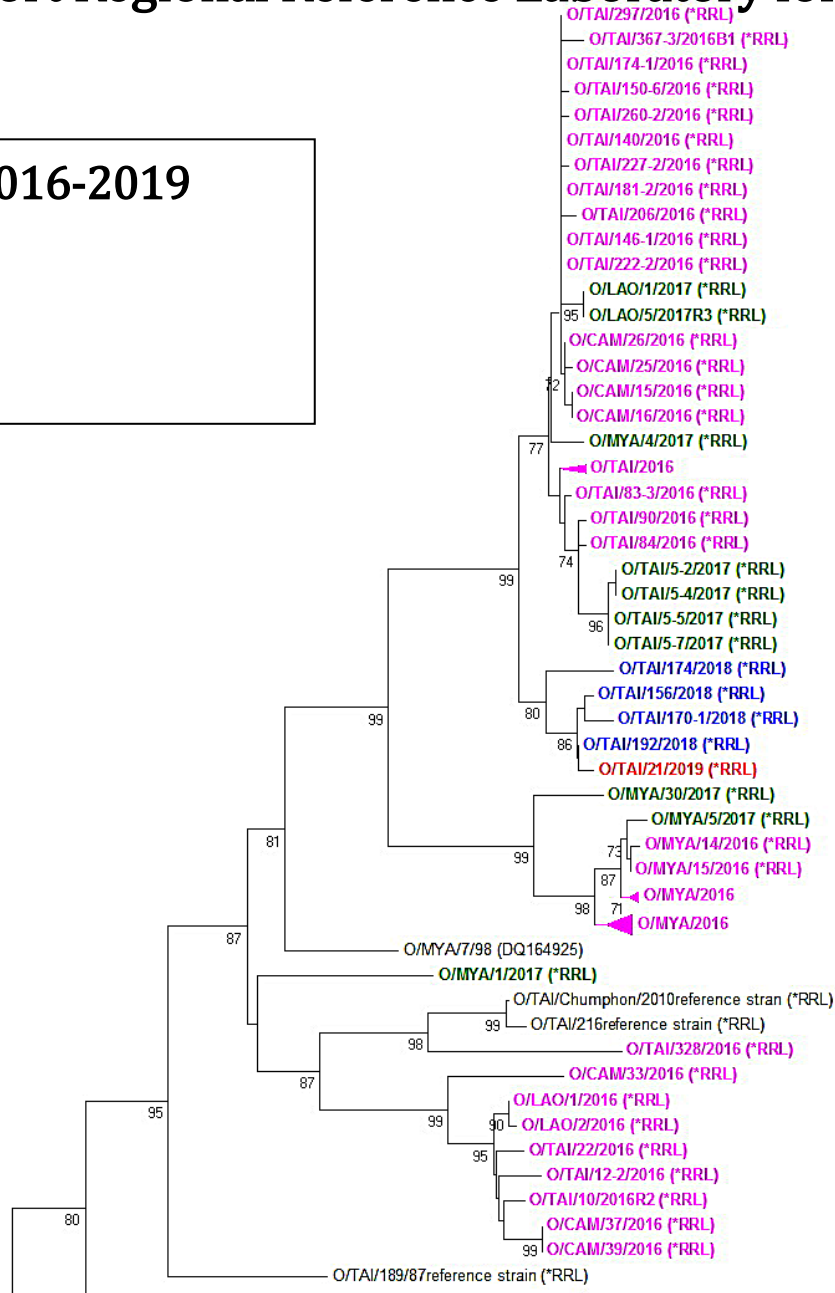
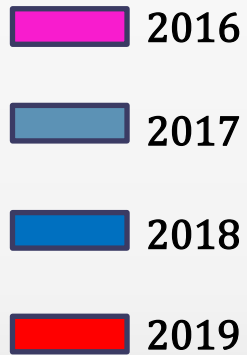


# FMD Genotyping Report Regional Reference Laboratory for FMD in South East Asia

## Report on FMDV O in 2016-2019

Strain : Mya-98,

Topotype : SEA

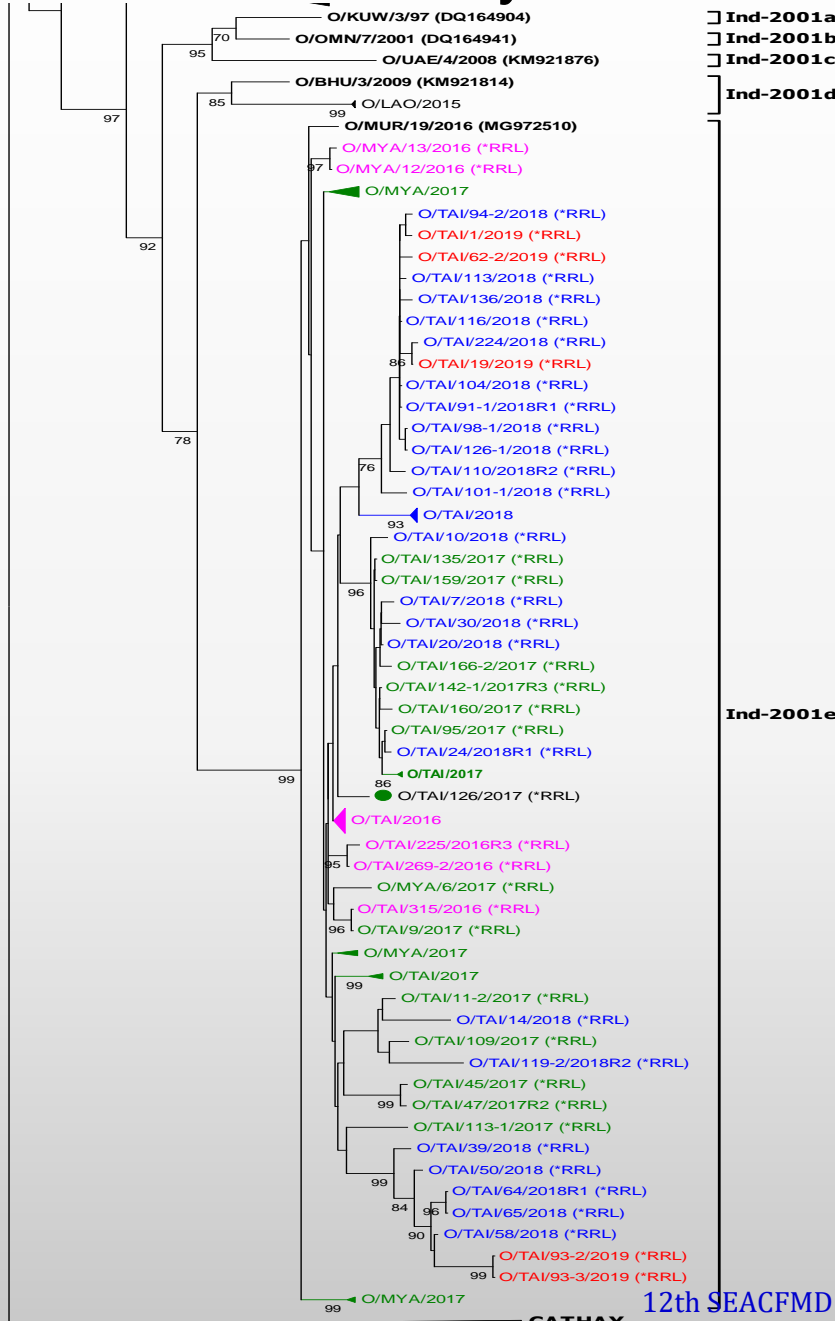
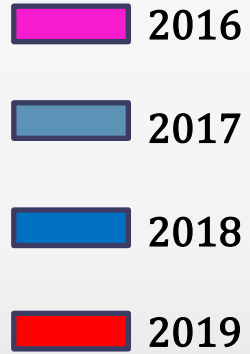


# FMD Genotyping Report Regional Reference Laboratory for FMD in South East Asia

## Report on FMDV O in 2016-2019

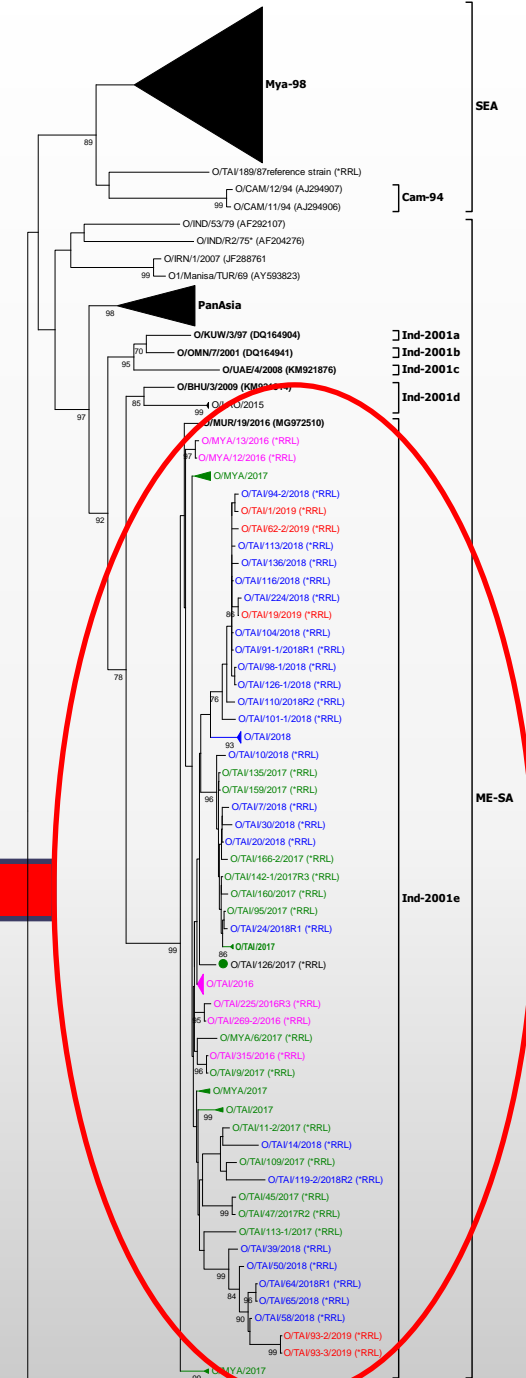
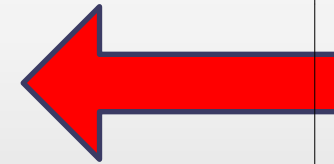
Strain : Ind-2001e,

Topotype : ME-SA



ME-SA

Ind-2001e



SEA

ME-SA

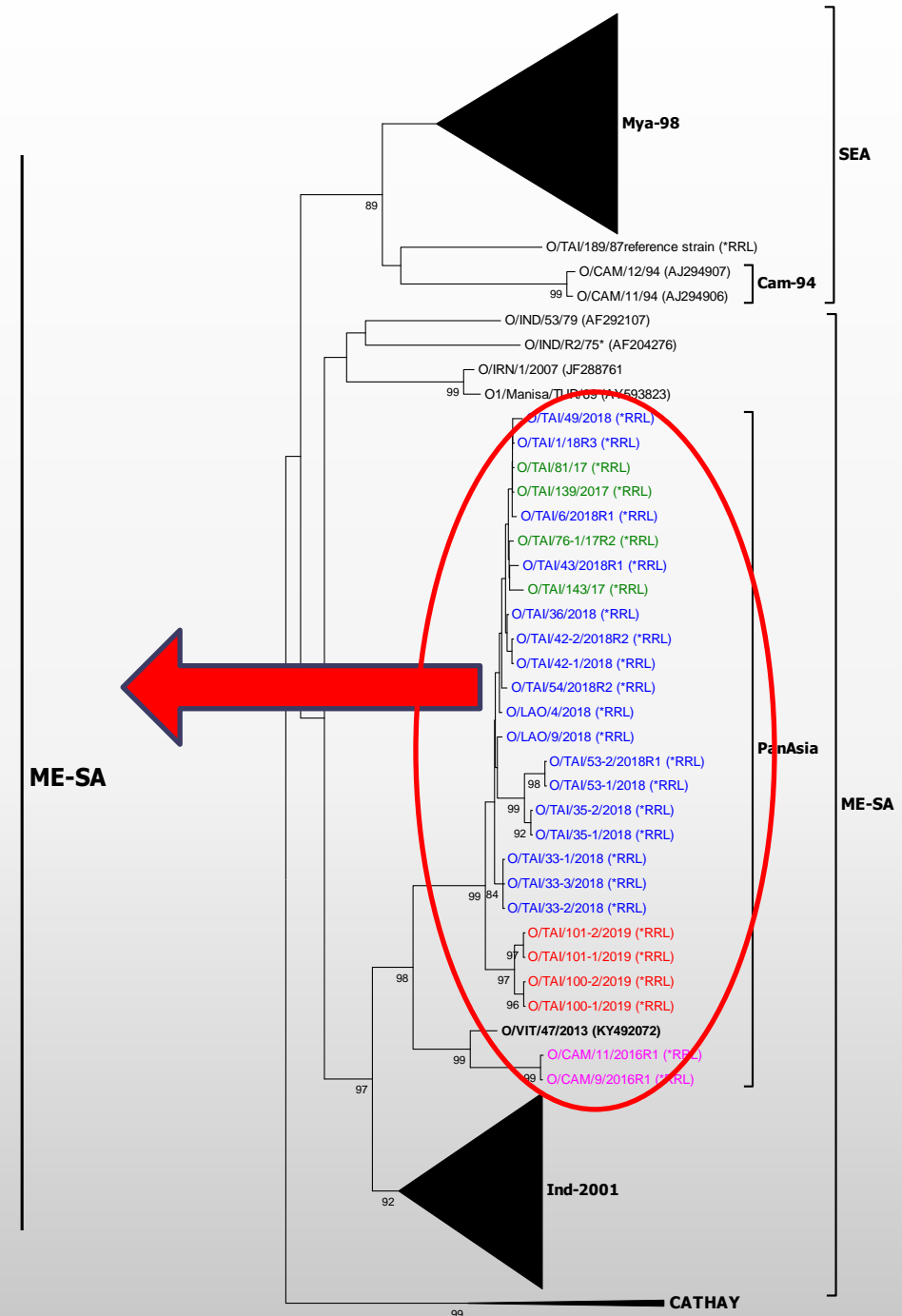
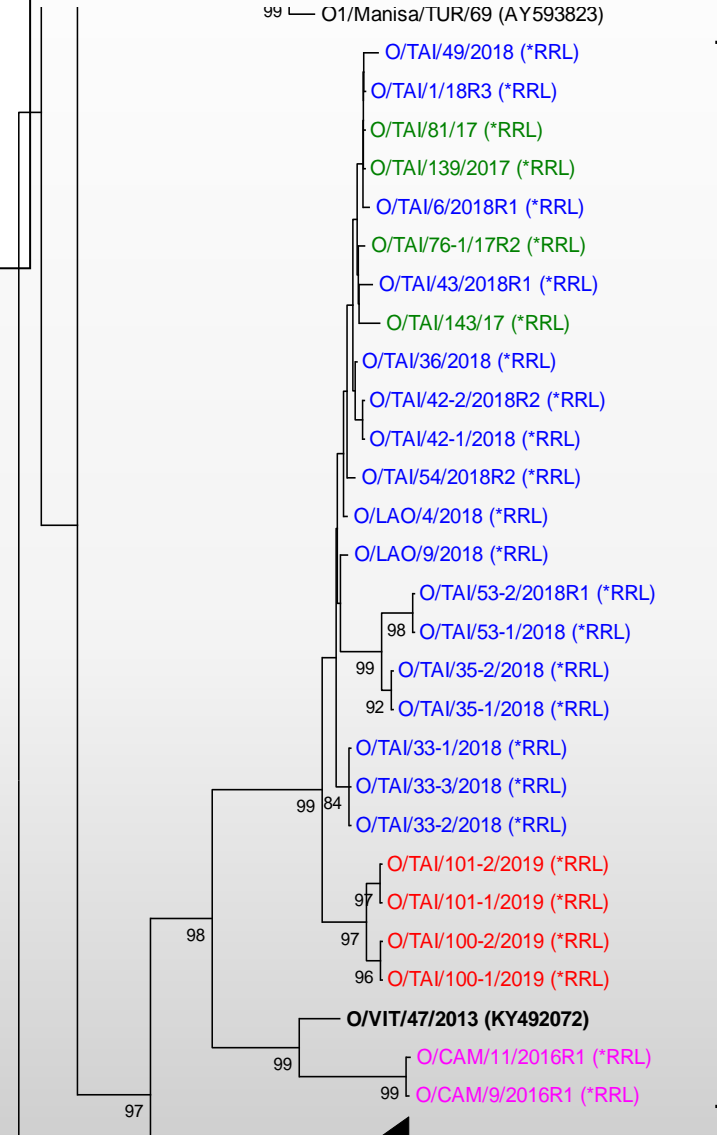
Ind-2001e

# FMD Genotyping Report Regional Reference Laboratory for FMD in South East Asia

## Report on FMDV O in 2016-2019

Strain : Pan Asia,

Topotype : ME-SA

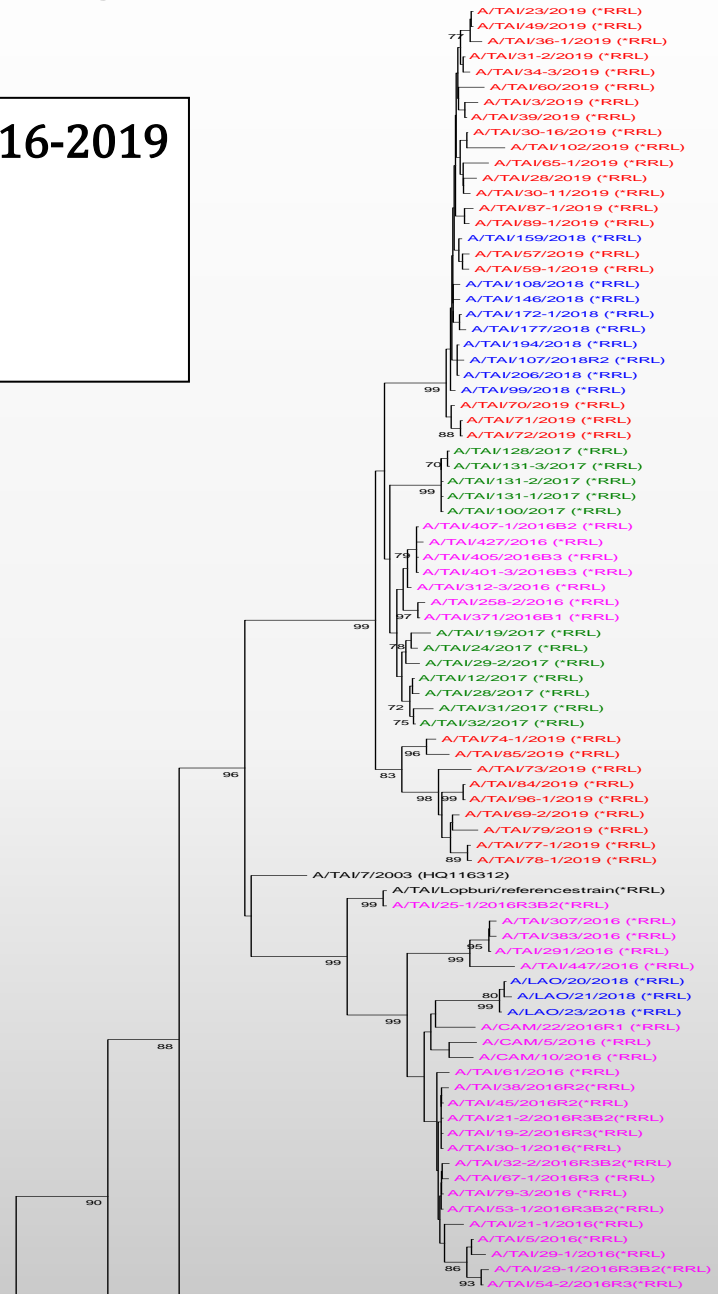
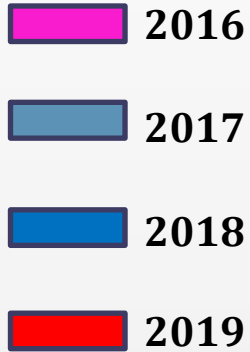


# FMD Genotyping Report Regional Reference Laboratory for FMD in South East Asia

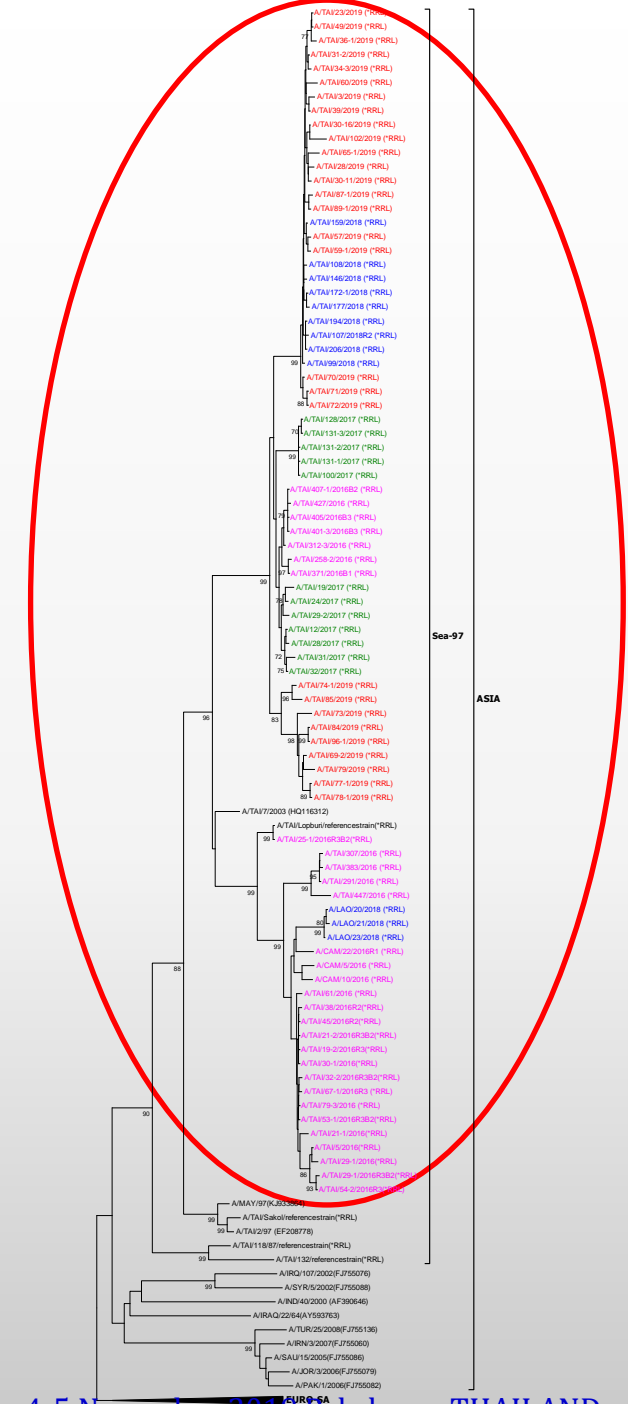
Report on FMDV A in 2016-2019

Strain : Sea 97

Topotype: ASIA



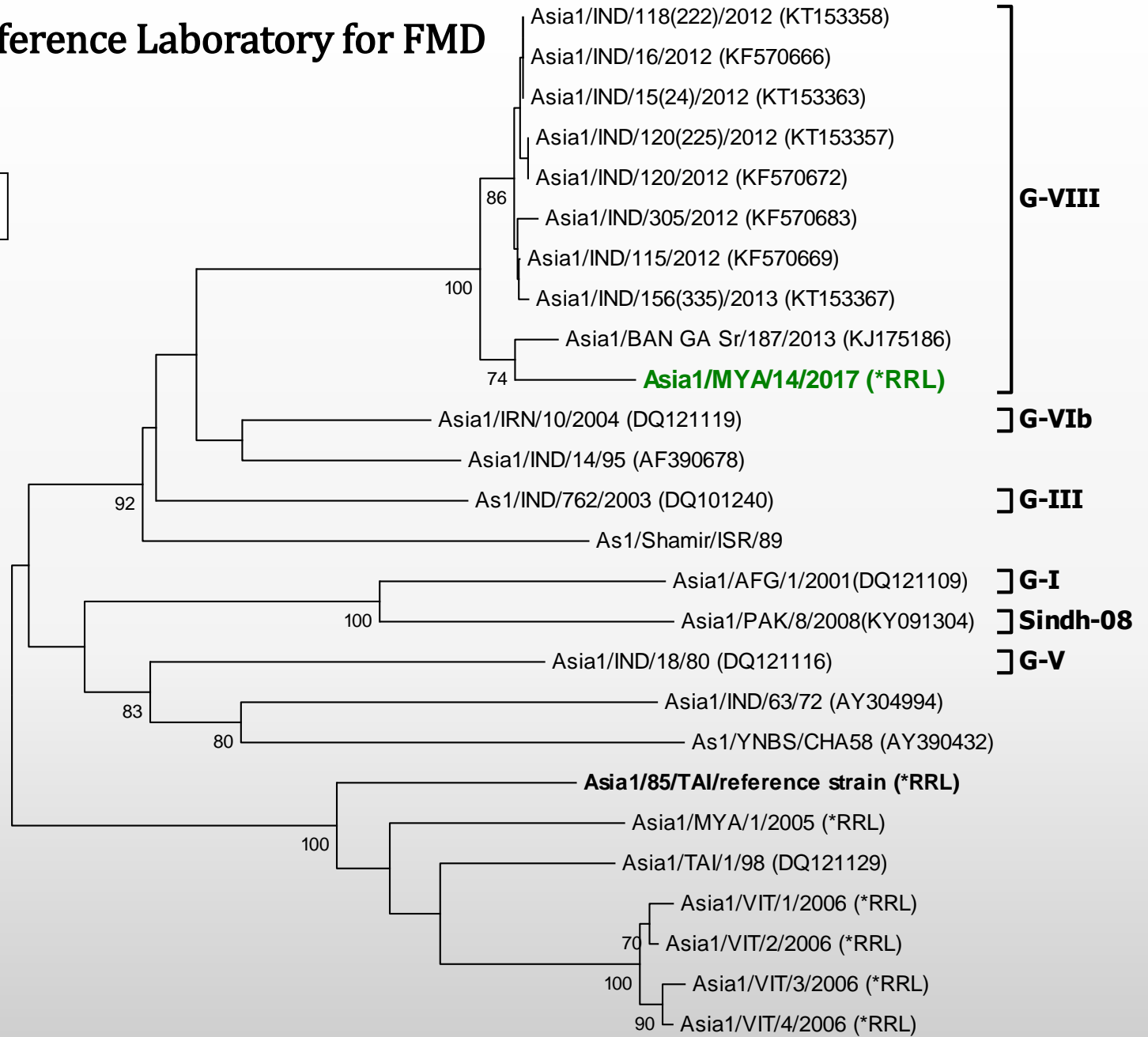
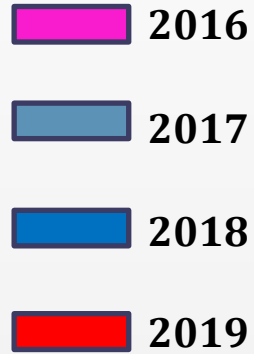
Sea-97  
ASIA



Sea-97  
ASIA

# FMD Genotyping Report Regional Reference Laboratory for FMD in South East Asia

## Report on FMDV Asia1 in 2016 - 2019



0.02

# Laboratory Diagnosis

## Supply of reagents in 2019 (Jan – Oct)

Reagent	National lab (Set)	International lab (Set)	Total
Rabbit type O	10	0	10
Rabbit type A	13	0	13
Rabbit type Asia1	9	0	9
Guinea pig type O	13	0	13
Guinea pig type A	21	0	21
Guinea pig type Asia1	11	0	11
Antigen Type O	10	0	10
Antigen Type A	14	0	14
Antigen Type Asia 1	8	0	8
Control serum c++, c+, c-	7	0	7

### Supplied reagents to

#### ❖ National Lab

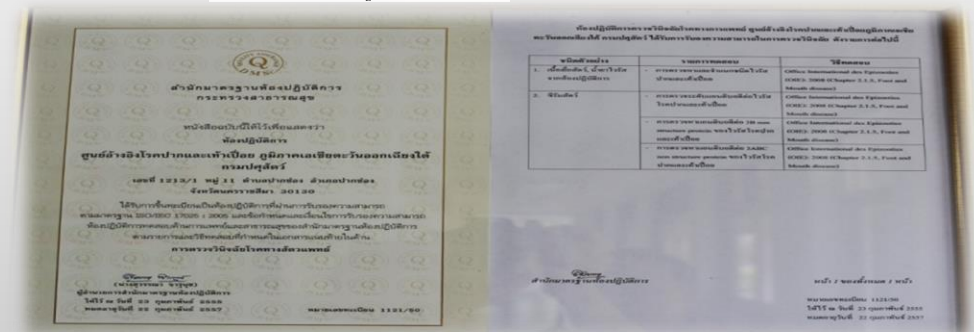
- ❖ VRDC- Upper northern (Lumpang)
- ❖ VRDC- Lower northern (Pitsanulok)
- ❖ VRDC- Upper northeastern (Khon Khaen)
- ❖ VRDC- Lower northeast (Surin)
- ❖ VRDC- Western (Ratchaburi)
- ❖ National Institute of Animal Health
- ❖ VRDC- East (Chonburi)
- ❖ VRDC- Southern 1 (Nakhonsrithammarat)
- ❖ VRDC- Southern 2 (Songkhla)

# Quality Assurance

❖ RRL has accredited by ISO/IEC 17025:2005 from Accreditation Body in Thailand, Bureau of Laboratory Quality Standard, Dept. of Medical Science

## Accreditation scopes:

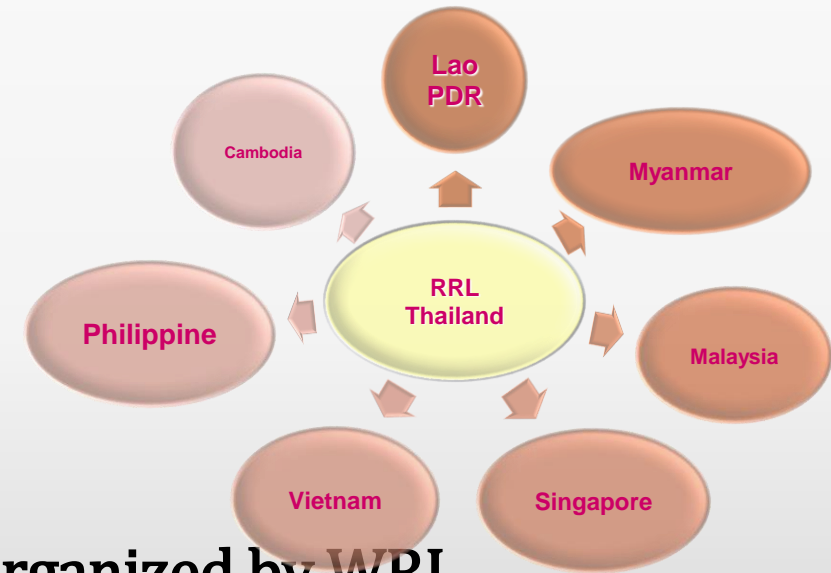
- Antigen typing test by ELISA technique
- Antibody measurement by LP ELISA
- 3ABC Non structural protein (NS) test



# Quality Assurance

## ❖ PROFICIENCY TESTING

- Plan to conduct the 7<sup>th</sup> /2019 Proficiency testing on FMD serology and antigen typing test in the region within 2019 by RRLSEA



## ❖ FMD PT Program

- Report the 2018 FMD PTS /participate 2019 PT organized by WRL

## ❖ Audited for ISO/IEC17025:2017 by accreditation body within 2019





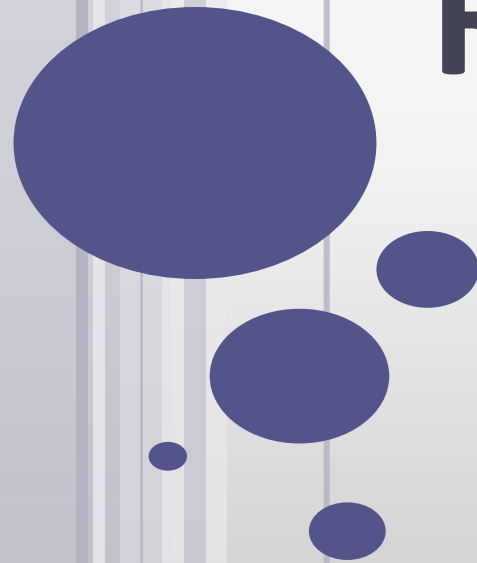
**MORU**   
Tropical Health Network



# INTRODUCTION

# RRLSEA RENOVATION

# PROJECT



# DTRA -MORU

## Training center / BSL-3 Renovation October 2019 – September 2023



## CONSTRUCTION PHASE MILESTONES

- **Training facility renovation complete**
  - August 2021
- **Decant from BSL3 to training facility**
  - September 2021
- **BSL3 refurbishment complete**
  - August 2023
- **Decant back into completed BSL3 facility**
  - September 2023

# PROJECT OVERVIEW

- **Equipment change**
- **The following slides present a set of images how the FMD RRL looks now and how it will look after the renovation project is complete**

# PLAN VIEW OF EXISTING FACILITY — INDICATING FLAT ROOFS



# PLAN VIEW OF PROSED FACILITY — WITH NEW PITCHED ROOFS



# EXISTING VIEW — NORTHWEST — MAIN ENTRANCE

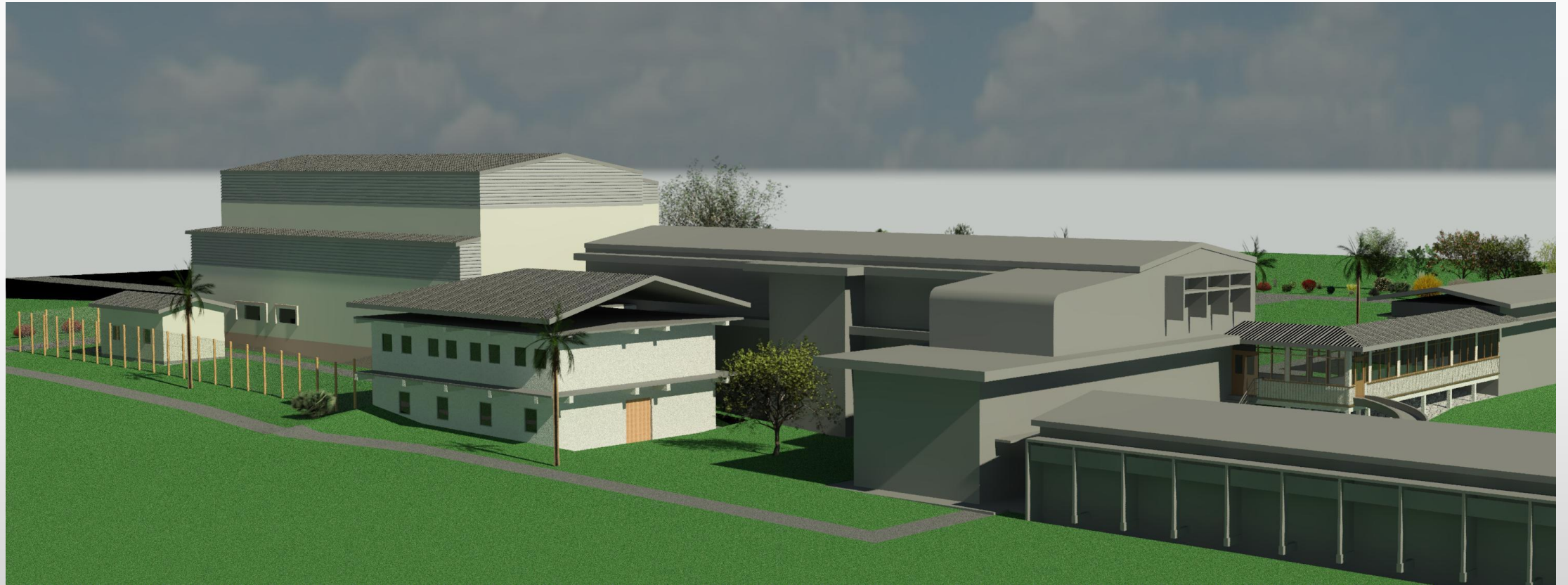


# PROPOSED VIEW — NORTHWEST — MAIN ENTRANCE





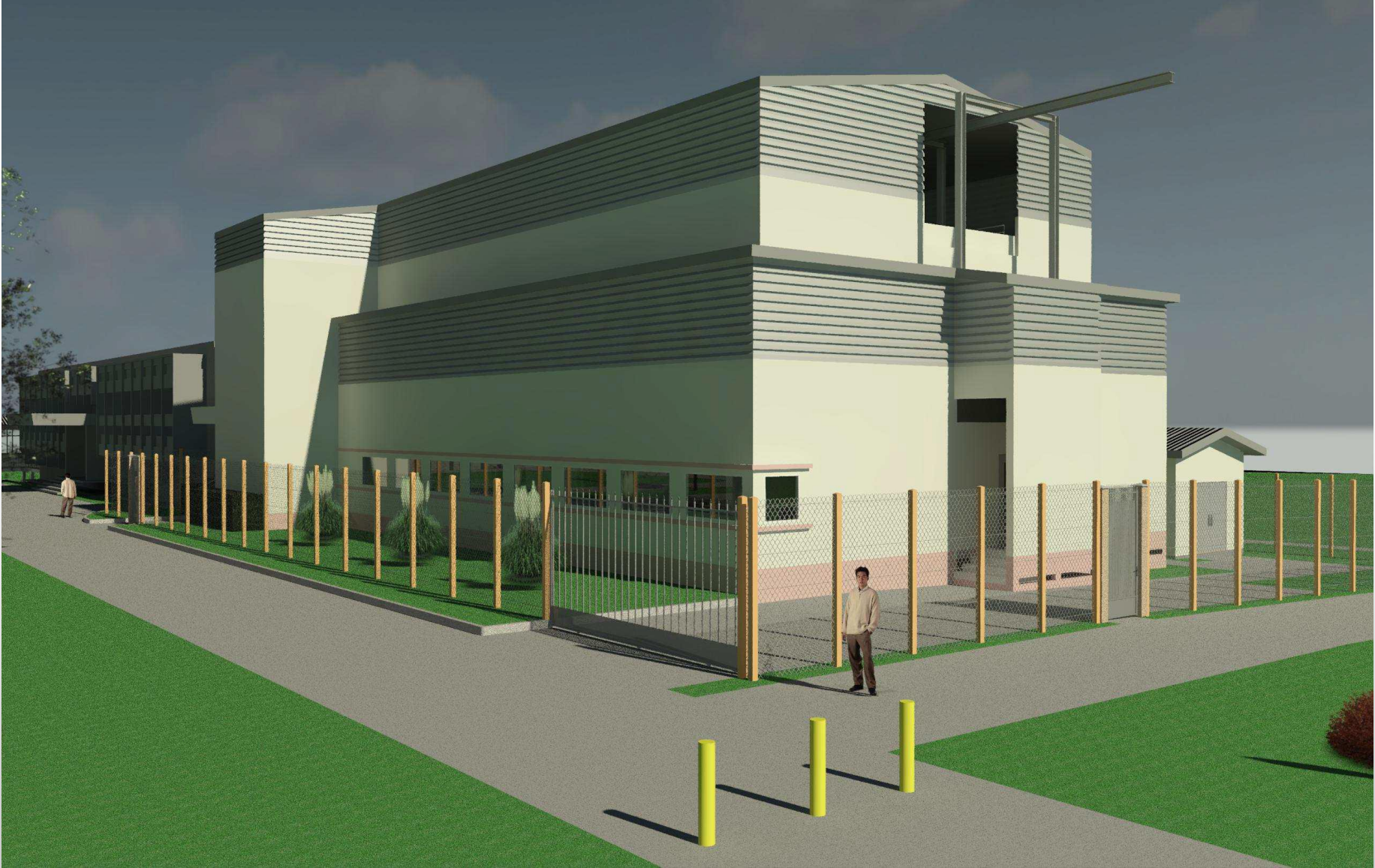
# VIEW FROM THE EAST ILLUSTRATING THE PROPOSED TWO STOREY TRAINING CENTRE IN FOREGROUND



# CLOSE UP VIEW ON MAIN ENTRANCE (PROPOSED) ILLUSTRATING ENHANCED SECURITY INSTALLATIONS



# VIEW FROM WEST (PROPOSED) SHOWING NEW PLANTROOM ACCESS ENHANCES SECURITY INSTALLATIONS



# TRAINING AND NETWORKING

## Meeting attended

- ❖ 10th Lab-TAG Meeting, Singapore, October 29-31, 2018
- ❖ 6<sup>th</sup> ALDF Meeting, Singapore, November 1-2, 2018
- ❖ 13<sup>th</sup> OIE/FAO FMD Reference Laboratories Network Annual Meeting, UK, November 6-8, 2018
- ❖ 6<sup>th</sup> Joint Meeting of NIAH Japan and NIAH Thailand, Japan, November 19-23, 2018
- ❖ 24<sup>th</sup> Meeting of the OIE Sub-Commission for Foot and Mouth Disease in SEA, China and Mongolia, Vietnam, 28-30 Nov 2018
- ❖ 22<sup>nd</sup> SEACFMD National Coordinators meetings in Mongolia June 25-27, 2019
- ❖ Veterinary Diagnostic Laboratory Network Coordination Meeting with Directors of African and Asia Veterinary in Austria, August 9 -23, 2019
- ❖ Regional Expert Group Meeting on Foot and Mouth Disease in Bangkok, Thailand

# TRAINING AND NETWORKING

## Meeting and Visiting

❖ CBEP DETRA, USA visited RRL, 4 April 2018



❖ NIAH, Japan visited in 6-10 August 2018



❖ Yunnan Animal Science and Veterinary Institute visited RRL, 11-12 Dec 2018

❖ MORU-DTRA in Cooperative Biological Engagement Project visited and assessed BSL-2 room in RRL, 1<sup>st</sup> Feb 2019

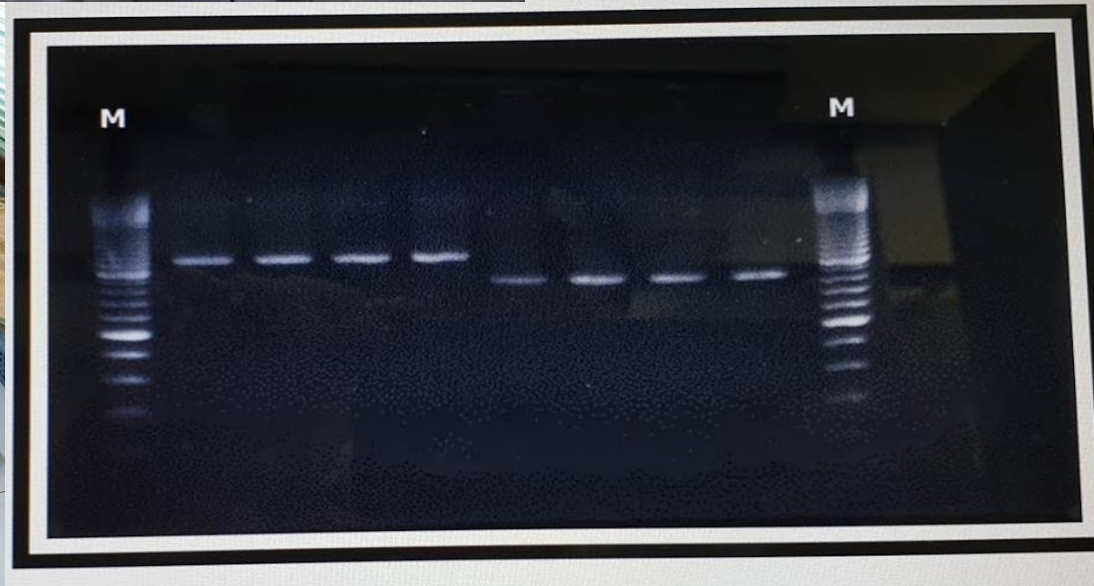
# TRAINING AND NETWORKING

## Trainings provided

❖ Trainee from Lao PDR, IAEA project: training on FMD diagnosis and vaccine matching during 8<sup>th</sup> January to 2<sup>nd</sup> February 2018



❖ The training course: Training on the Use of Nuclear Derived Techniques for Early Detection and Typing of Foot and Mouth Disease (FMD)



12th SEACFMD Laboratory Network Meeting, 4-5 November 2019, Pakchong, THAILAND

# TRAINING AND NETWORKING

## Training : RRL staff

- ❖ Lancang-Mekong Cooperation (LMC) TADs Prevention and Control “Laboratory Training and Field Study on Diagnosis of Trans-boundary Animal Diseases in Lancang-Mekong Countries”, Yunnan Province, P.R. China, June 11-14, 2018
- ❖ Japan Asia Exchange program in Science, Japan, December 7-16, 2018.
- ❖ OIE Sub-Regional training on applying Geographic Information Systems (GIS) for advanced spatial analysis of animal health data 16–19 October 2018 Bangkok, Thailand
- ❖ Monoclonal Preparation of ELISA technique for FMD diagnosis at NIAH, Japan, May-June 2019





# Research & Collaboration

## International collaborations

### ❖ Collaboration research with AAHL, Australia

- Develop the serotyping for FMDV type O, A and Asia1 by real-time RT-PCR
- Develop the application of Next Generation Sequencing protocol for the whole genome sequencing of FMD virus in South East Asia
- FMDV vaccine matching studies in SEA
- Potential of Reduction of Ag Path Reagent used in FMD real-time TagMan PCR

# Research & Collaboration

## International collaborations

### ❖ Collaboration research with Japan

Miyazaki University April 2020 to March 2015

- Pen site kit for FMD diagnosis
- Vesicular disease diagnosis

NIAH

- Scientific meeting

# Research & Collaboration

## RESEARCH

- **Detection and Serotyping of Foot and Mouth disease Virus in Thailand by using One-step Multiplex RT-PCR**
- **Comparative performance of secondary lamb kidney cells, ZZ-RB127 cells and BHK-21 cells for titer detection of foot and mouth disease virus. (Ongoing)**
- **Molecular Epidemiology of Foot and Mouth disease Virus serotype O in Thailand during 2017-2019**
- **Comparative sensitivity and specificity in commercial foot and mouth disease virus non structural protein ELISA kit (Ongoing)**

# Probang



# Research & Collaboration

## Future plan

- ❖ **Development FMD diagnostic technique by real time RT-PCR**
- ❖ **Monoclonal antibody**

THANK YOU FOR YOUR ATTENTION



Acknowledgements: RRL staff