

China Institute of Veterinary Drug Control

Update Swine Disease Diagnosis-Related Information

——Classical Swine Fever Virus

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- Senior Veterinarian, IVDC

Main contents

- China Institute of Veterinary Drug Control
- Classical Swine Fever(CSF)-Current status
- Prevention and control of CSF in China
- Research progress of CSF at IVDC



About our institute

China Institute of Veterinary Drug Control (IVDC) was established in 1952.

As a national institute affiliated to Ministry of Agriculture and Rural Affairs (MOARA) of China, it is responsible for the evaluation, supervision and inspection of veterinary drugs





重点实验室 Key laboratories

WOAH/National RL for CSF

**National Laboratory of Veterinary Drug
Safety Evaluation (Surveillance of
Antimicrobial Resistance)**

WOAH/National RL for Brucellosis

**National Reference Laboratory
of Veterinary Drugs Residues**

FAO/WOAH Rinderpest Holding Facility



WOAH/National RL for CSF



中华人民共和国农业部公告

第 2645 号

第二批国家兽医参考实验室名单

1. 国家猪瘟参考实验室

所在单位: 中国兽医药品监察所

地 址: 北京市大兴区生物医药基地庆丰路 33 号

邮 编: 102600

农 业 部
2018 年 1 月 29 日

WOAH confirmed the IVDC as a new OIE reference laboratory for CSF in June 2017, and MARA confirmed the IVDC as a National reference laboratory for CSF again in 2018

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Classical Swine Fever Virus (CSFV)

- Enveloped, positive-sense, single-stranded RNA virus

Flaviviridae family

Infect domestic pigs and wild boars

WOAH listed disease

- 导致急性、慢性猪瘟和非典型
Acute, chronic and atypical
- 经济损失极大 Great economic loss
- 有中国的C株疫苗可有效防控

C strain for efficient prevention & control



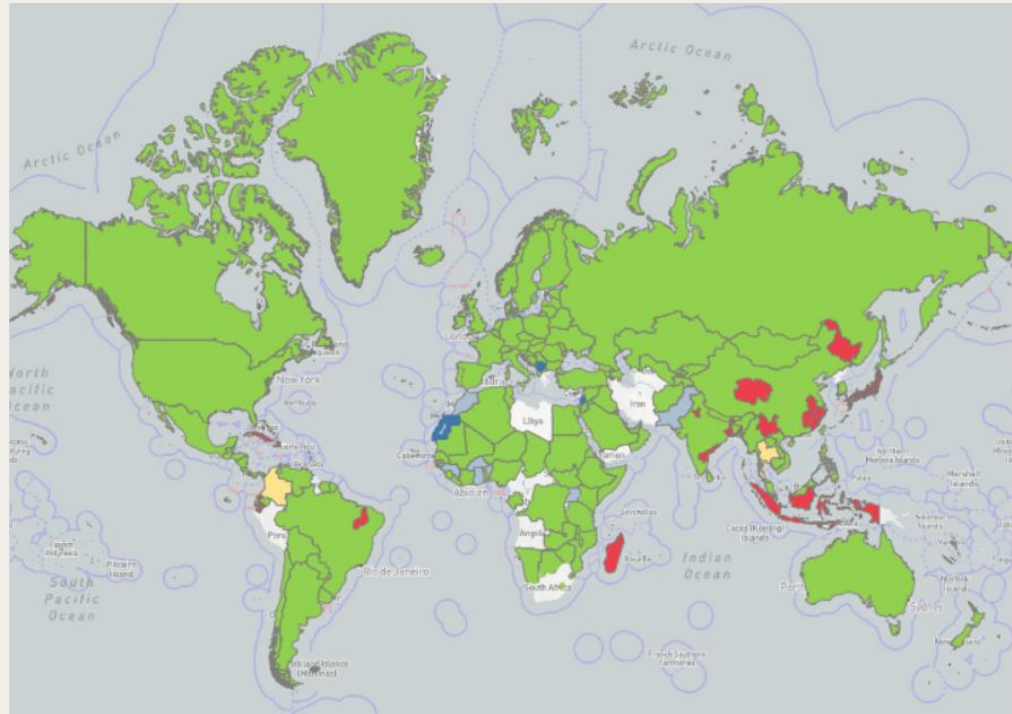
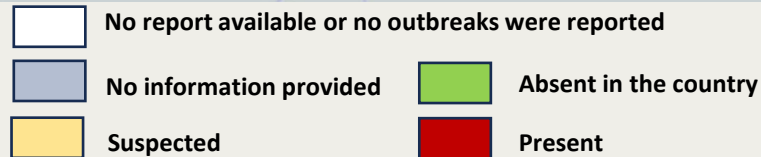
局部皮肤出血、发绀

腹泻



嗜睡、食欲废绝

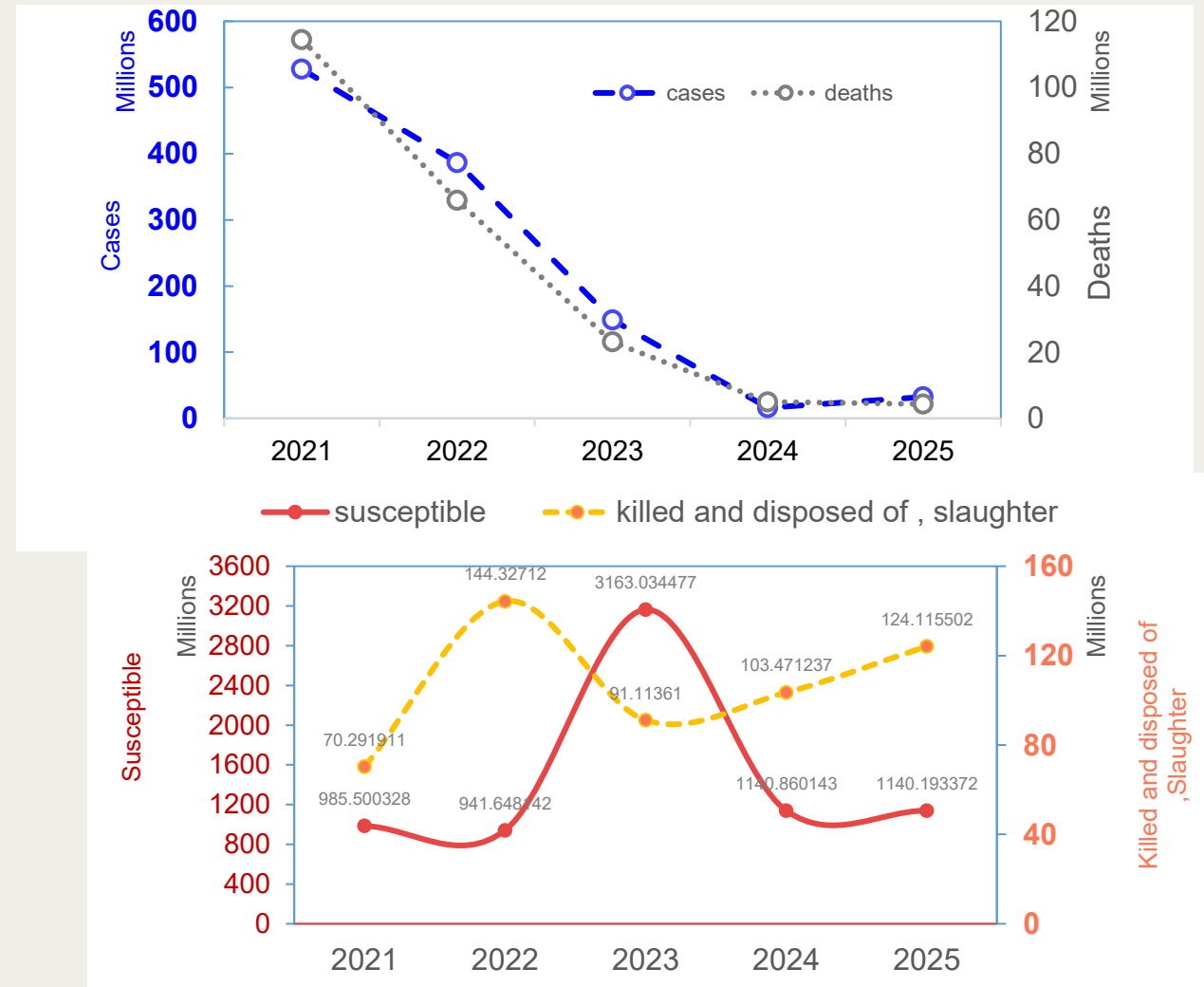
Current CSF Status Worldwide (2025-2026)



CSF free (39): Argentina, Australia, Austria, Belgium, Bulgaria, Canada, Chile, Chinese Taipei, Costa Rica, Croatia, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Kazakhstan, Latvia, Liechtenstein, Luxembourg, Malta, Mexico, New Caledonia, New Zealand, Norway, Paraguay, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, The Netherlands, United Kingdom, United States of America, Uruguay

CSF free zones: some areas in Bolivia, Brazil, Colombia, Ecuador

From 2021-2025 Cases and Deaths by CSFV



From 2021-2025 Cases and Deaths by CSFV were dramatically decreased but the number of susceptible and finally killed and disposed or slaughtered pigs was much higher. This reminds us the importance of prevention and control of CSFV

Data collected from WAHIS

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Types of CSF vaccines



Conventional Live attenuated vaccines

- ◆ C strain (China)
- ◆ GPE attenuated strain (Japan)
- ◆ Thival strain (France)
- ◆ PAV strain (Mexico)
- ◆ Rovac strain (USA)
- ◆ LK & CS strains (Russia)

Chimeric MLVs

DIVA vaccine CP7_E2alf: BVDV as backbone, carries CSFV-E2 gene ("Alfort/187")

Recombinant E2 glycoprotein-based vaccines

Only elicits antibodies against the E2 glycoprotein

Commercial vaccines available for CSF in China

Type of Vaccine	Product name
Live attenuated vaccine	CSF Live attenuated vaccine (Cell culture)
	CSF Live attenuated vaccine (C Strain, PK/WRL cell culture)
	CSF Live attenuated vaccine (C strain, Suspension culture)
	CSF live attenuated vaccine (C strain, ST suspension culture)
	CSF and PRV live attenuated vaccine (C strain + HB2000 strain)
	CSFV and HP-PRRSV Thermo-stable vaccine (C strain + GDr180 strain)
	HP-PRRSV and CSFV Thermo-stable vaccine (TJM-F92 strain + C strain)
	HP-PRRSV, CSF and PRV live attenuated vaccine (TJM-F92 strain+C strain+Bartha-K61, suspension culture)

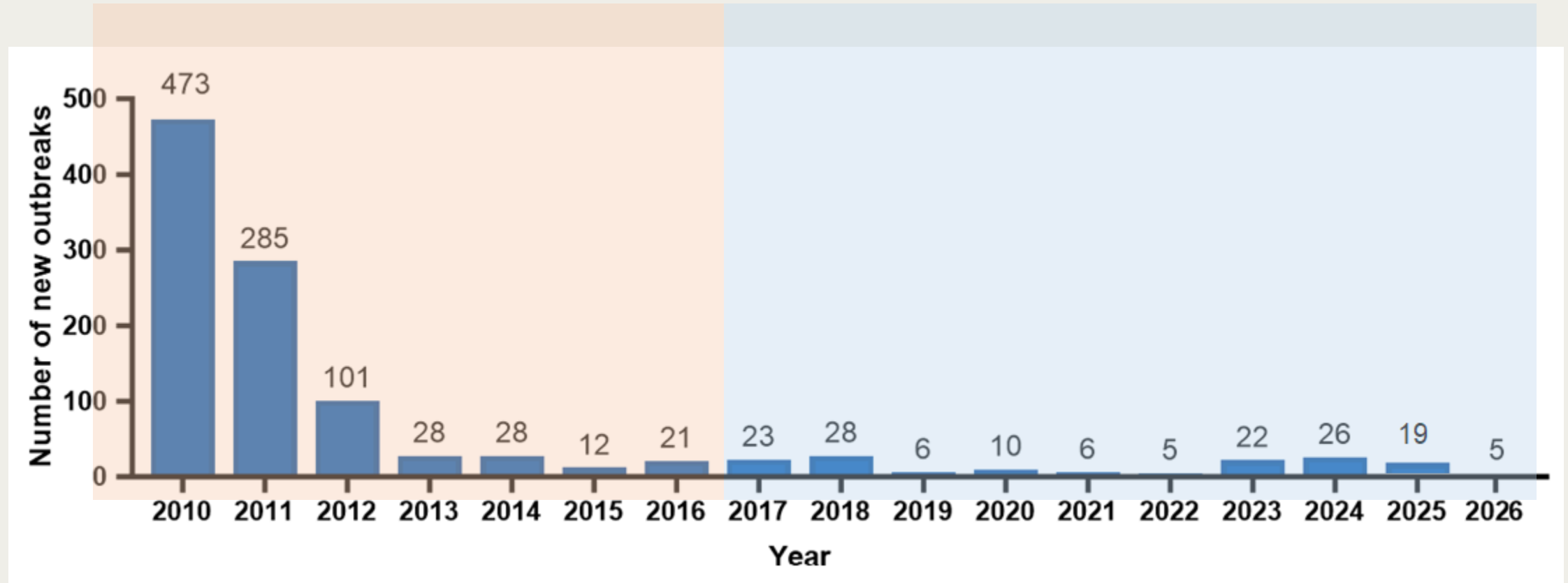
CSFV live attenuated vaccine (C strain) is the most effective and safe vaccine

Commercial vaccines available for CSF in China

Type of Vaccine	Product name
CSF Subunit Vaccine	Classical Swine Fever Virus E2 Protein Recombinant Baculovirus Vaccine, Inactivated (Strain Rb–03)
	Classical Swine Fever Virus E2 Protein Recombinant Baculovirus Vaccine, Inactivated (Strain WH -09)
	Gene engineering subunit vaccine for CSFV (293T-E2)
	Gene engineering subunit vaccine of CSFV (CHO-133D)

Prevention-Oriented Comprehensive Control Strategies of CSF in China

2010-2026 New outbreaks reported



Compulsory vaccination Before 2016

Comprehensive vaccination from 2017

According to WOA data, from 2010-2016 CSF outbreaks in China has gradually decreased.
Our vaccination strategies has also changed.

Data from WAHIS, July 2025

Tests method available for CSFV 猪瘟检测方法

Method	Purpose诊断目的					
	Population freedom from infection	Individual animal freedom from infection prior to movement	Contribute to eradication policies	Confirmation of clinical cases	Prevalence of infection-surveillance	Immune Status in individual animals or populations post po-vaccination
Detection of the agent						
Virus isolation	-	+	-	+++	-	-
RT-PCR	+	+++	++	+++	++	-
ELISA (antigen)	++	+	+	+	-	-
FAT	-	-	+	+	-	-
Detection of immune response						
ELISA (antibody)	+++	+++	+++	-	+++	+++
VN (FAVN / NPLA)	+	+++	++	++	+++	+++

+++ = recommended for this purpose; ++ recommended but has limitations;
+ = suitable in very limited circumstances; – = not appropriate for this purpose.

Current situation of CSF diagnosis kits in China

➤ **Product for the agent : No registered product**

➤ **Product for CSFV Ab-ELISA :**

	Method	Number of products
Domestic (15)	CSFV Indirect ELISA antibody detection kit	3
	CSFV Blocking ELISA antibody detection kit	9
	CSFV CLIA ELISA antibody detection kit	2
	CSFV E ^{rns} Indirect ELISA antibody detection kit	1
Imported	CSFV Blocking ELISA antibody detection kit	1

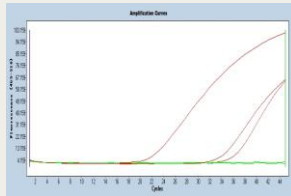
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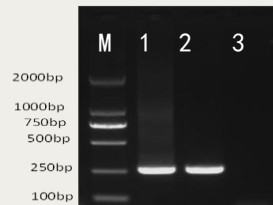
Diagnostic Reagents corresponding to Manual and national standard

CSFV viral RNA Detection

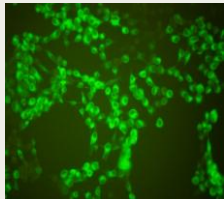
Real time RT-PCR



RT-nPCR



IFAT



Kits for CSFV Ab-ELISA

Indirect ELISA Kit to Detect Antibody against CSFV



Blocking ELISA Kit For CSFV Antibodies



CLIA Kit to Detect Antibody against CSFV



Laboratory Proficiency Test--WOAH Inter-laboratory comparison test (ILCT)

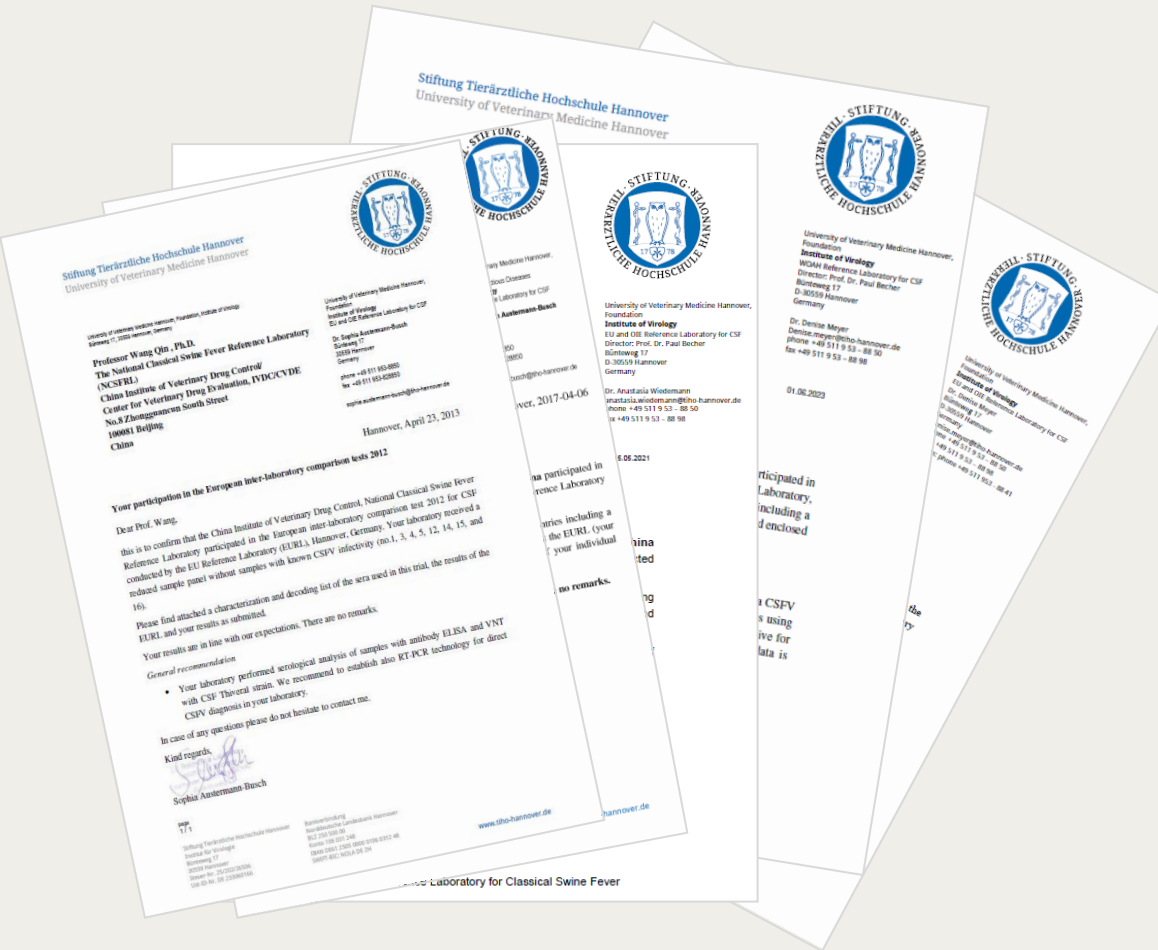
2009-2023: 9 times in line with expectations

◆ Methods for CSF RNA :

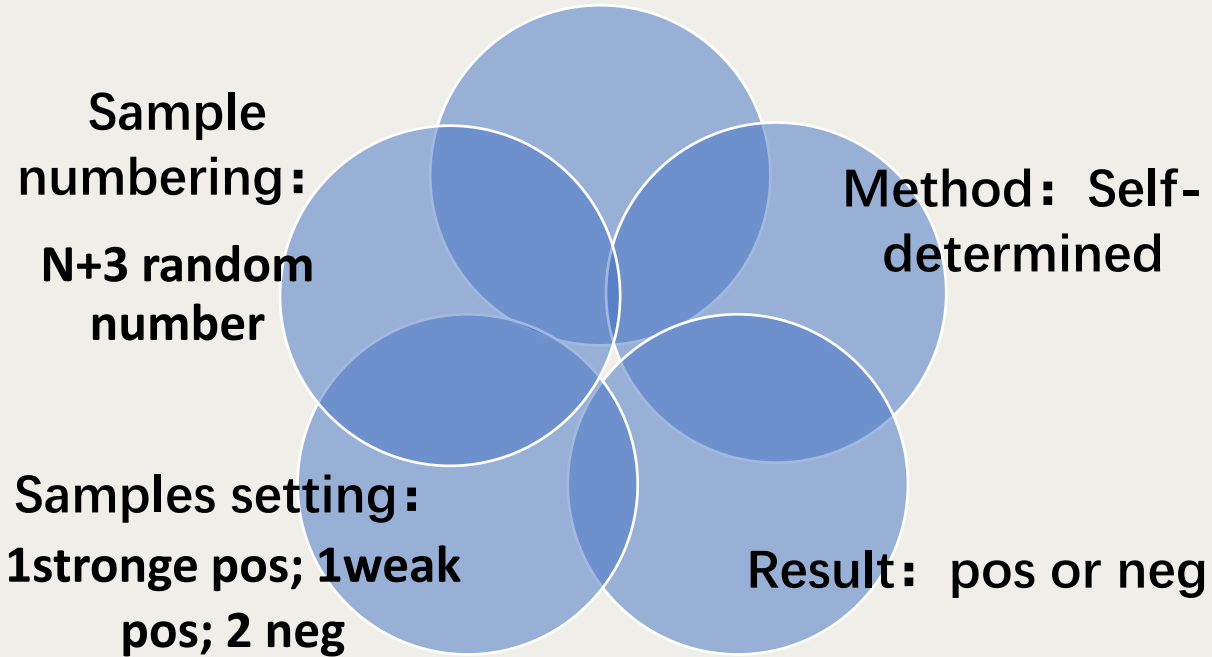
- ✓ Real time RT-PCR method to CSFV RNA;
- ✓ RT-nPCR method to CSFV RNA
- ✓ Real time RT-PCR method to BVDV RNA

◆ Methods for CSF Ab :

- ✓ Indirect ELISA method to CSFV Ab
- ✓ Blocking ELISA method to CSFV Ab
- ✓ CLIA competitive ELISA method to CSFV Ab
- ✓ FAVN



Laboratory Proficiency Test——National Proficiency Testing for CSF



Nucleic Acid test (RT-PCR or RT-qPCR)

97 Laboratories from 28 provinces

98.97% accurate

Serological Test (ELISA)

103 Laboratories from 27 provinces

92.25% Accurate

122 local laboratories anticipated



Reference materials of CSF



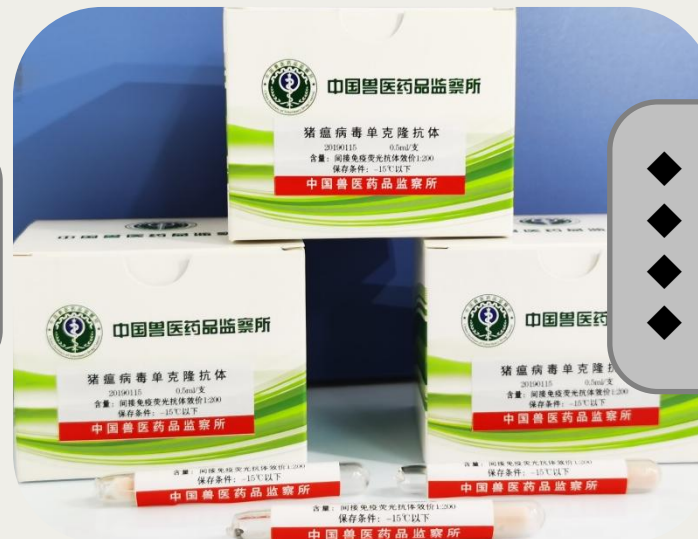
- ◆ Evaluation of nucleic extraction
- ◆ Evaluation of nucleic kit
- ◆ Proficiency tests

CSFV nucleic reference materials



- ◆ Development of Ab detection kit
- ◆ Evaluation of Ab detection kit
- ◆ Proficiency tests

猪瘟抗体检测质控血清盘 Sera panel for CSFV Ab



- ◆ CSFV virus isolation
- ◆ FAT
- ◆ TCID₅₀
- ◆ Neutralization Test

猪瘟病毒单克隆抗体 McAbs to E2



- ◆ Evaluation of Ab detection kit
- ◆ Adventitious virus detection
- ◆ Vaccine test

猪瘟阴、阳性血清参考品 Positive and negative sera to CSFV

Reference materials of CSF supplied by IVDC in China (17)

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)
National reference positive Serum of C-strain vaccine (1ml/Ampoule)	C-strain vaccine test	Produced	361ml
National reference negative serum of CSFV (1ml/Ampoule)	Neutralization test in vitro	Produced	1ml
National reference positive serum of CSFV (1ml/Ampoule)	Neutralization test in vitro	Produced	4ml
National reference negative serum of CSFV	Neutralization test in rabbit	Produced	9ml
National reference positive serum of CSFV(1:(8.5±1.3))	Neutralization test in rabbit	Produced	54ml
National reference negative serum of CSFV	ELISA/NPLA/ AVN for antibody detection, virus Isolation, FAT, IPT for antigen detection	Produced	8ml
National reference positive serum of CSFV (weak 1)	ELISA/NPLA/ AVN for antibody	Produced	7ml
National reference positive serum of CSFV (weak 2)	ELISA/NPLA/ AVN for antibody detection, virus Isolation, FAT, IPT for antigen detection	Produced	7ml

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)
National reference negative swine serum (0.5ml/tube)	ELISA/NPLA/ AVN for antibody detection, virus Isolation, FAT, IPT for antigen detection	Produced	40ml
CSFV E2 monoclonal antibody (1C8) (0.5ml/tube)	ELISA/NPLA/ AVN for antibody detection, virus Isolation, FAT, IPT for antigen detection	Produced	22ml
Indirect immunofluorescence assay(IFA) kit for CSFV (50µl/well, 200 well/kit,)	IFA for CSFV antigen or antibody detection	Produced	140kits
Reference Positive Serum of PRV	Detection for extraneous agents of C-strain vaccine	Produced	232ml
Reference Positive Serum of PCV II	Detection for extraneous agents of C-strain vaccine	Produced	29ml
Reference Positive Serum of PCV II(lyophilized)	Detection for extraneous agents of C-strain vaccine	Produced	25ml
Reference vaccine strain of PRRSV	Detection for extraneous agents of C-strain vaccine	Produced	2ml
Reference Positive Serum of ASFV	FAVN/NPLA/ELISA	Produced	58ml
Indirect immunofluorescence assay(IFA) kit for PCV2 (50µl/well, 200 well/kit,)	Detection for extraneous agents of swine vaccine	Produced	117 kits

CSF Technical Trainings & Conference



CSF Training for Philippines scholars, 2019



National CSF Training for local technicians 2026



2023 International Symposium on CSF and Other Important Swine Diseases

Thank you!

Contact information

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❖ 86-10-62103679