



New and Emerging Diseases of Swine - 2023



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Getahvirus (GETV)



Getah Virus

Mosquito and biting fly (culicoides) borne disease

Alphavirus (RNA, 10-11 kb). Not related to JEV (a flavivirus).

Abortions

Early Farrowing

Mummification

Pneumonia and CNS signs in perinatal pigs

Diarrhea









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Getah Virus – Pathology

Severe acute interstitial pneumonia (viral)

Hemorrhagic meningoencephalitis





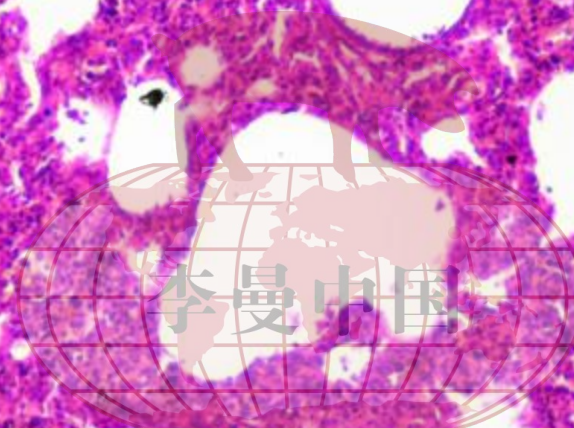
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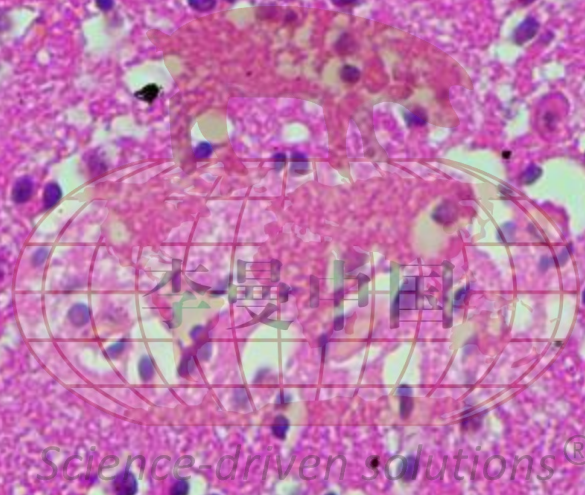


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Getah Virus – Differential Diagnosis

PRRS; PRV (Pseudorabies)

PCV2/3

Parvovirus and JEV

Astrovirus and other shaker pig viruses (Shaker pigs can live)

Streptococcosis

Enterovirus; Teschen/Talfan disease; EMC virus

CSF/ASF



Getah Virus – Confirmed Diagnosis

PCR / qPCR / LAMP

Histopathology

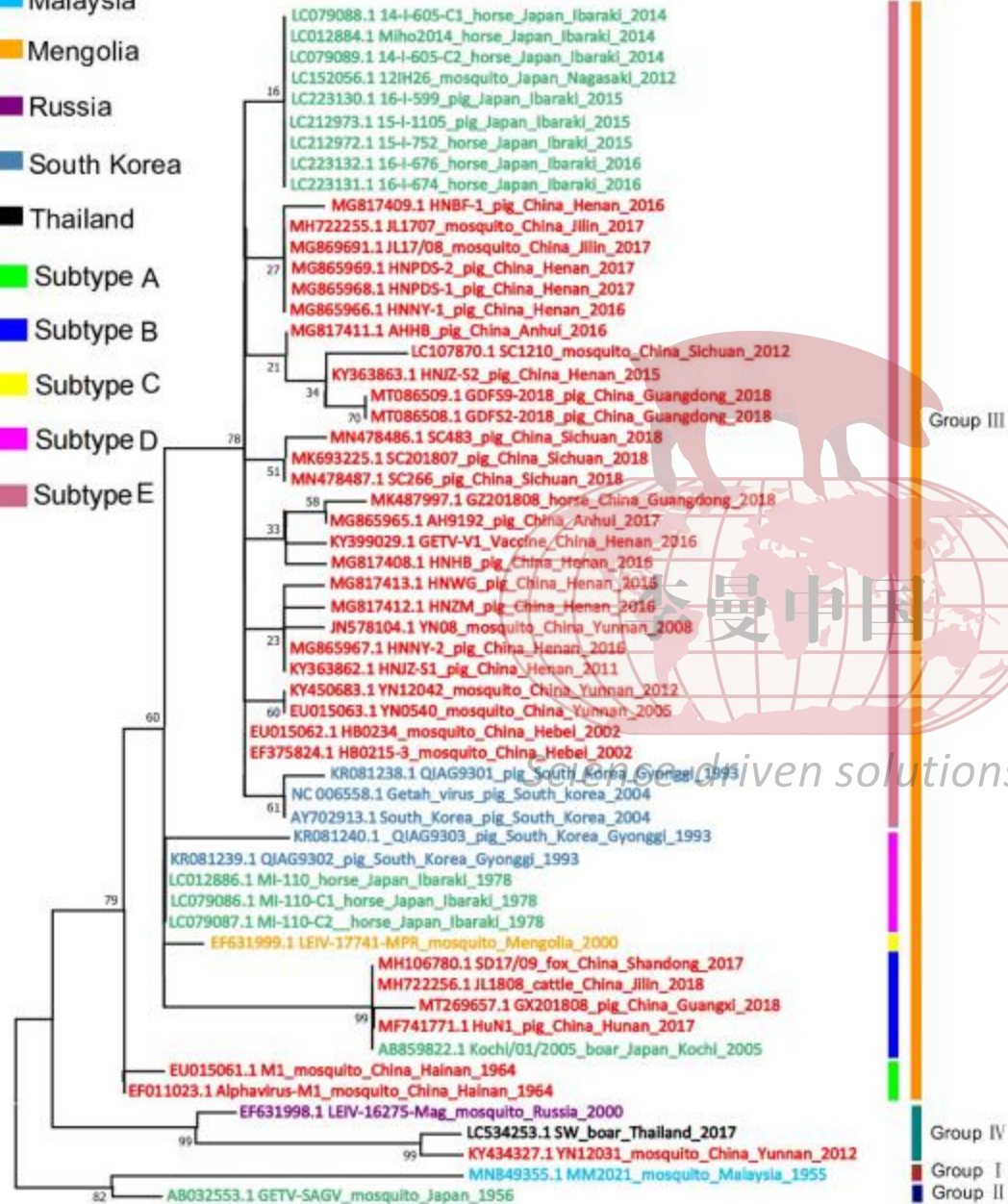
Signs/Situation

Rule out other diagnoses

May be co-existent with JEV



- China
- Japan
- Malaysia
- Mongolia
- Russia
- South Korea
- Thailand
- Subtype A
- Subtype B
- Subtype C
- Subtype D
- Subtype E



GETV Phylogeny

4 Major Groups of GETV

China - Red

Japan - Green

Korea - Blue

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Group IV
Group I
Group II

Getah Virus - How is it spread?

Apparently only mosquitos and midges are important
Experimentally can be spread by oronasal route.





Getah Virus in other Species & Man

Horses - Fever, Rash and Leg Edema; recover in 1 – 2 weeks

Cattle – Fever

Foxes – High mortality

Humans – transient fever?



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Getah Virus – Geography and Epidemiology

Widespread in Asia and China

Surveys show up to 3% of mosquitos carry the virus

Pigs and Horses are amplifying hosts

About 1 % of horses and pigs are found to carry the virus

Increased incidence at end of summer 2022; 2023.



Getah Virus – Geography and Epidemiology

No apparent danger to human health.

Some economic loss in pig production

New consideration in undiagnosed abortion storms.

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Parvovirus, Enterovirus, CSF, JEV, Pseudorabies, PRRS
Encephalomyocarditis virus, Influenza virus can cause
mummies.

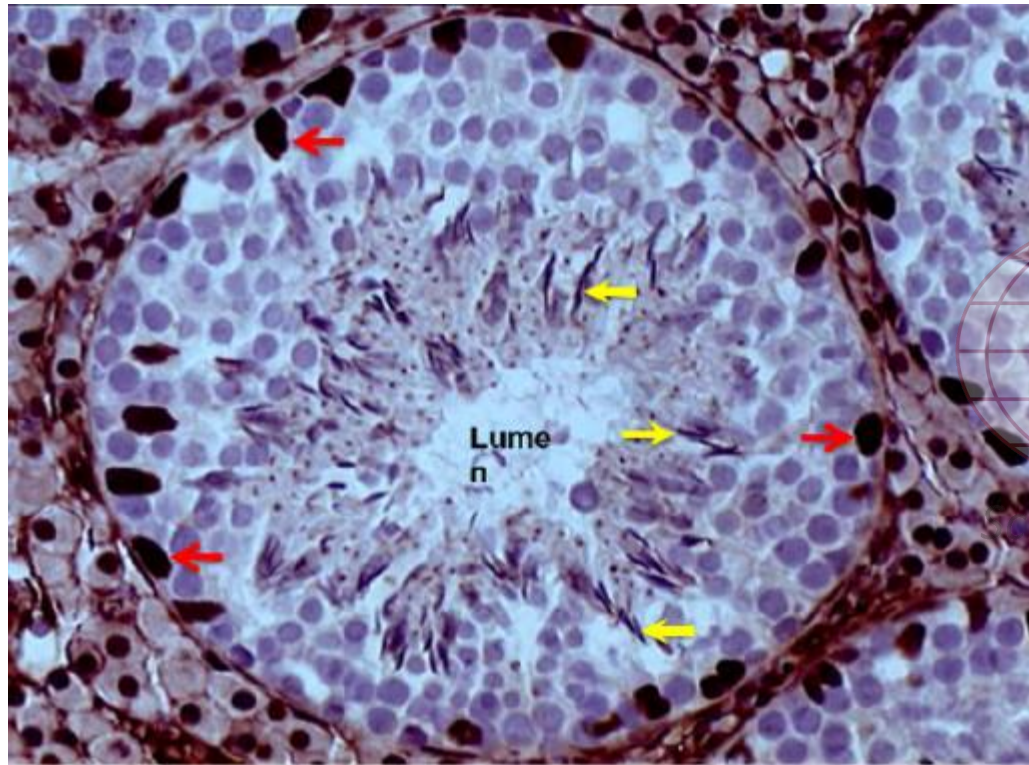


Brucellosis

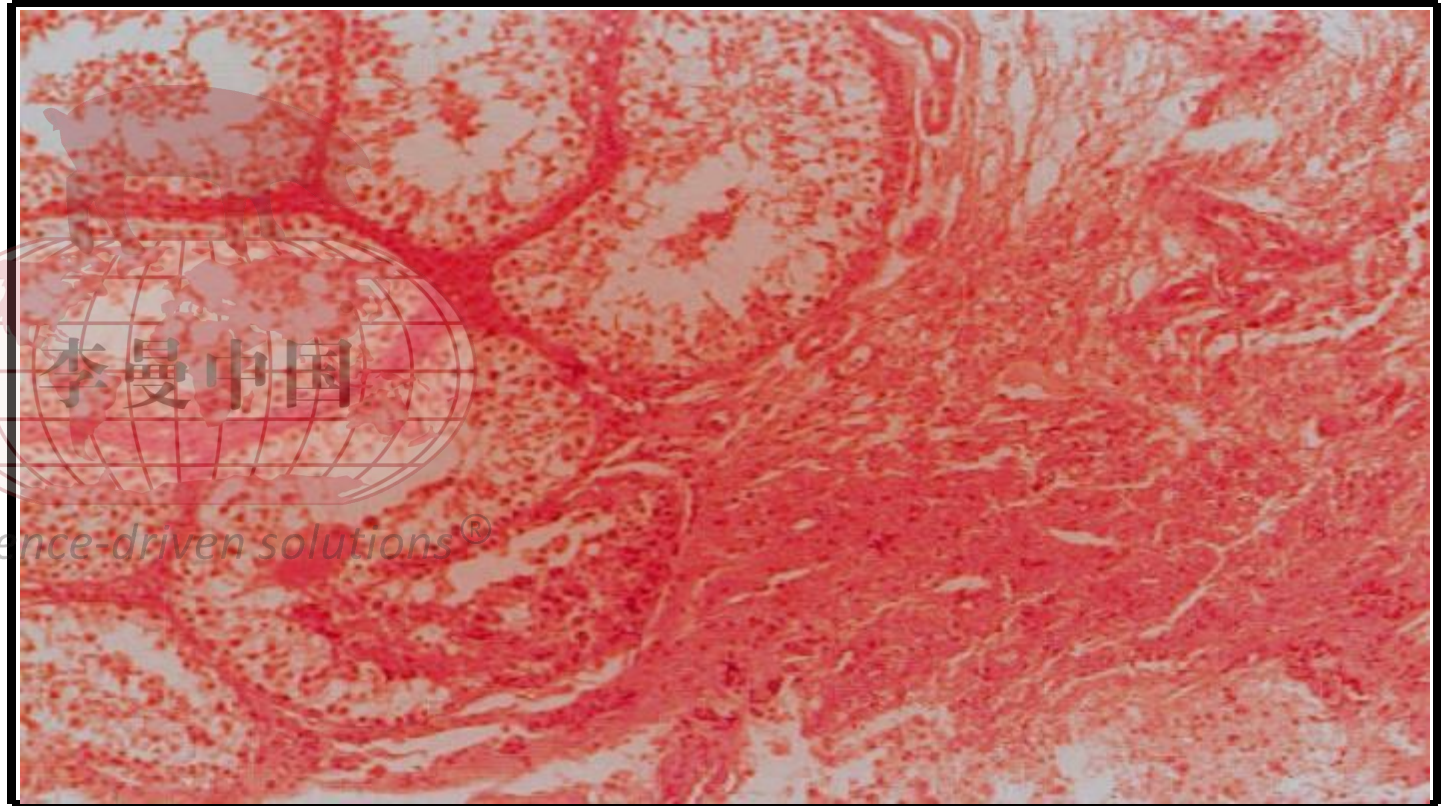


JEV

Normal testicle



JEV



Getah Virus – Outbreaks

Abortion storms; Early Farrowing

PRRS-like Abortion syndrome

CNS-signs - trembling, shaking, incoordination

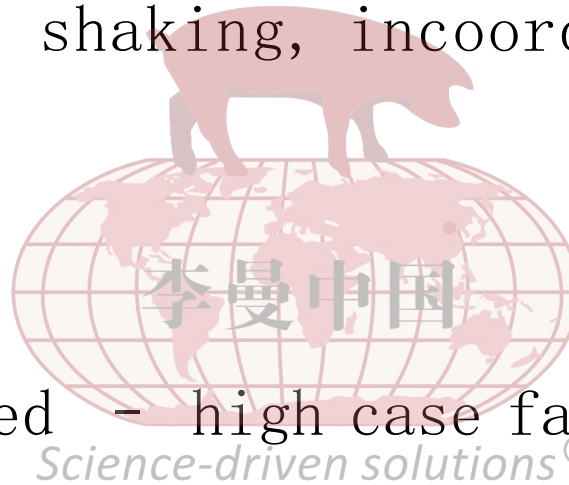
Pneumonia

Diarrhea

Up to 50% of pigs affected - high case fatality

Normal and affected pigs in same litter

Does not seem to spread.



Getah Virus – Prevention

Mosquito and biting fly control

Vaccination

Combination vaccine

Parvovirus

JEV – multistrain *Science-driven solutions*®

GETV – KV or subunit platform vaccine



Porcine Circovirus (PCVAD)

At least 4 different types of PCV (1, 2, 3, 4) exist

PCV1 is associated with shaker pig disease, and PCV2 is associated with two serious syndromes, Porcine Mortality and Wasting Syndrome (PMWS) and Porcine Dermatitis and Nephropathy Syndrome.

PCV3 is increasingly associated with PCV2-like disease and a viral reproductive syndrome in sows

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Circoviral disease is more severe when it is complicated by PRRS.





One disease syndrome
associated with circovirus
is the Porcine Dermatitis Nephropathy
Syndrome (PDNS)



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Note skin lesions

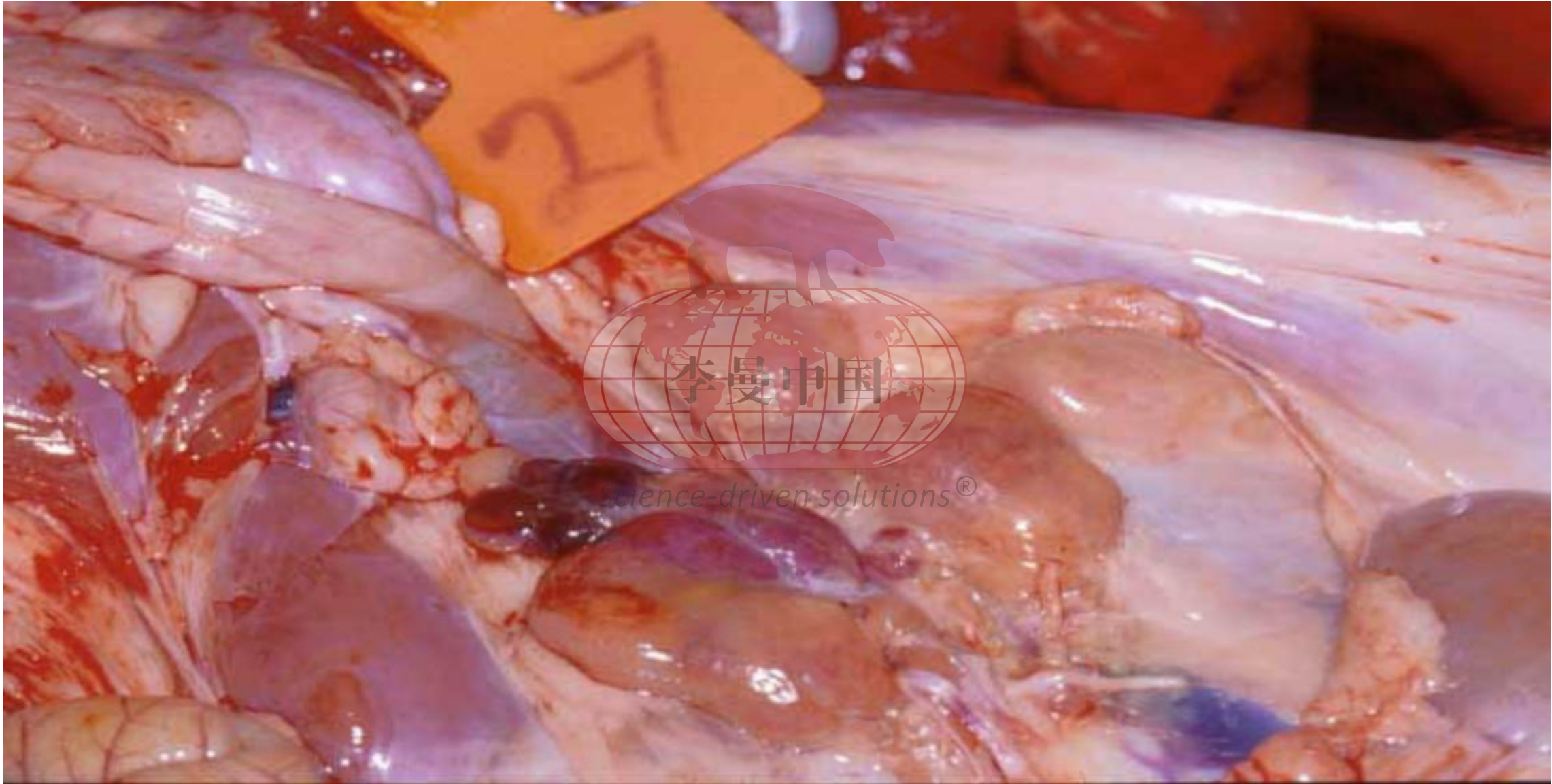
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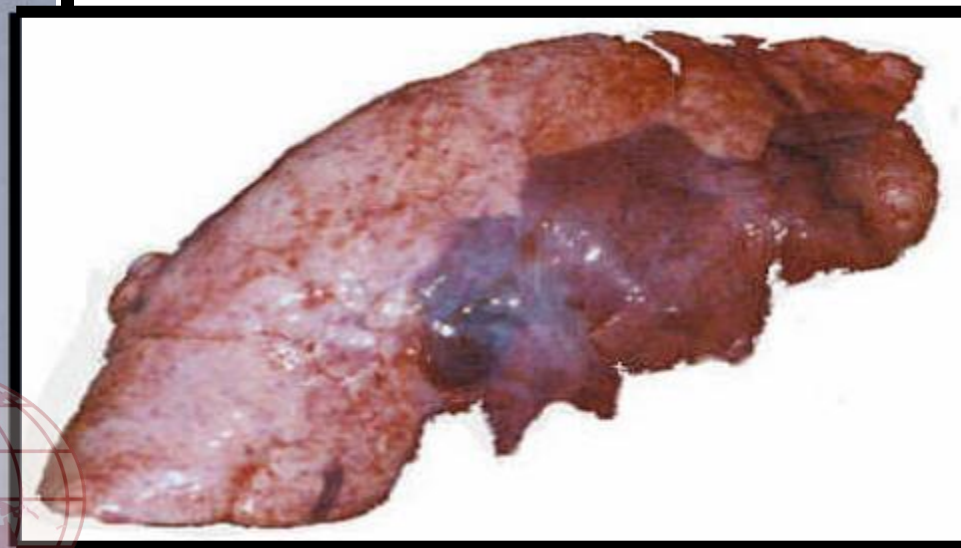






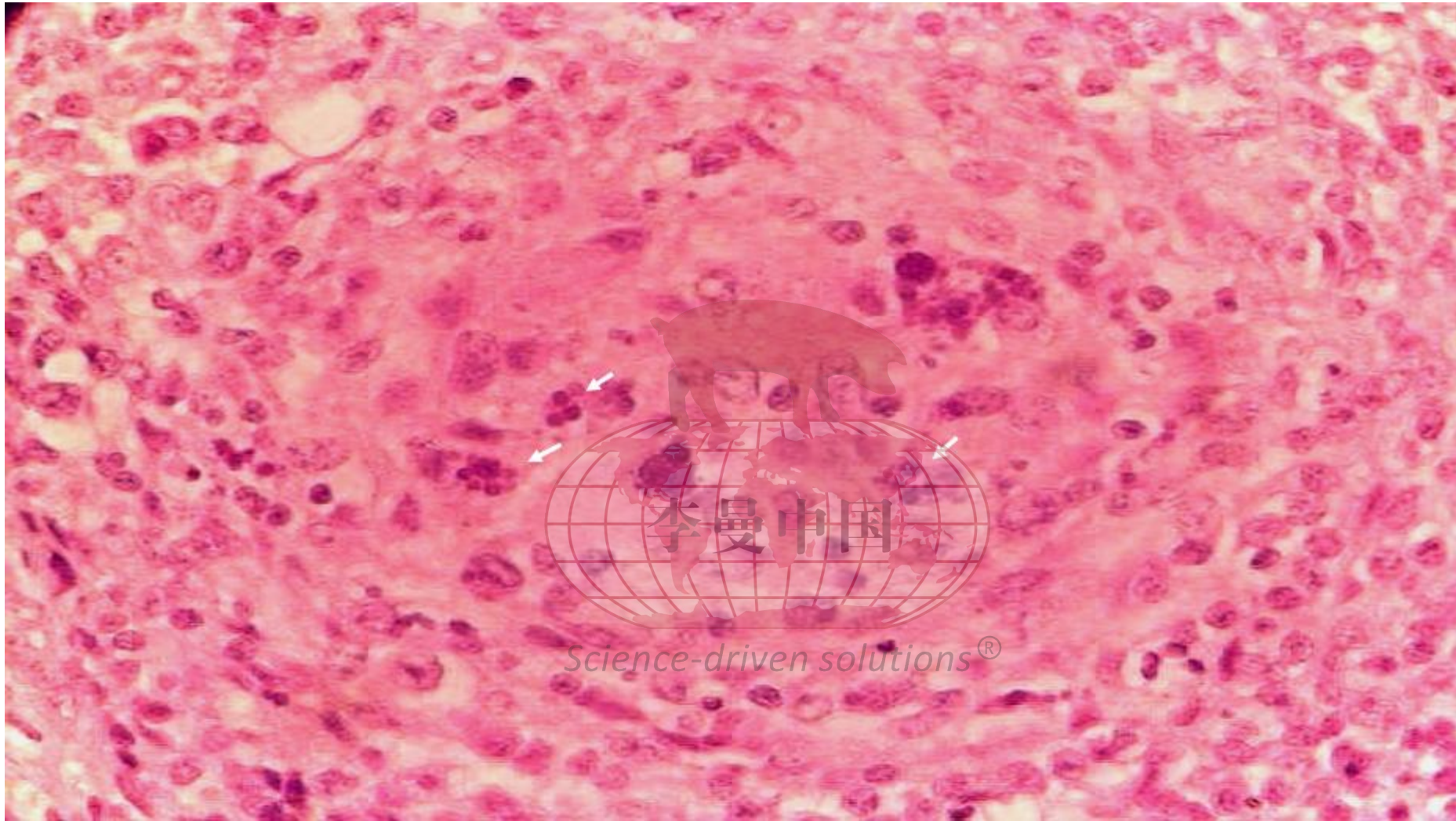
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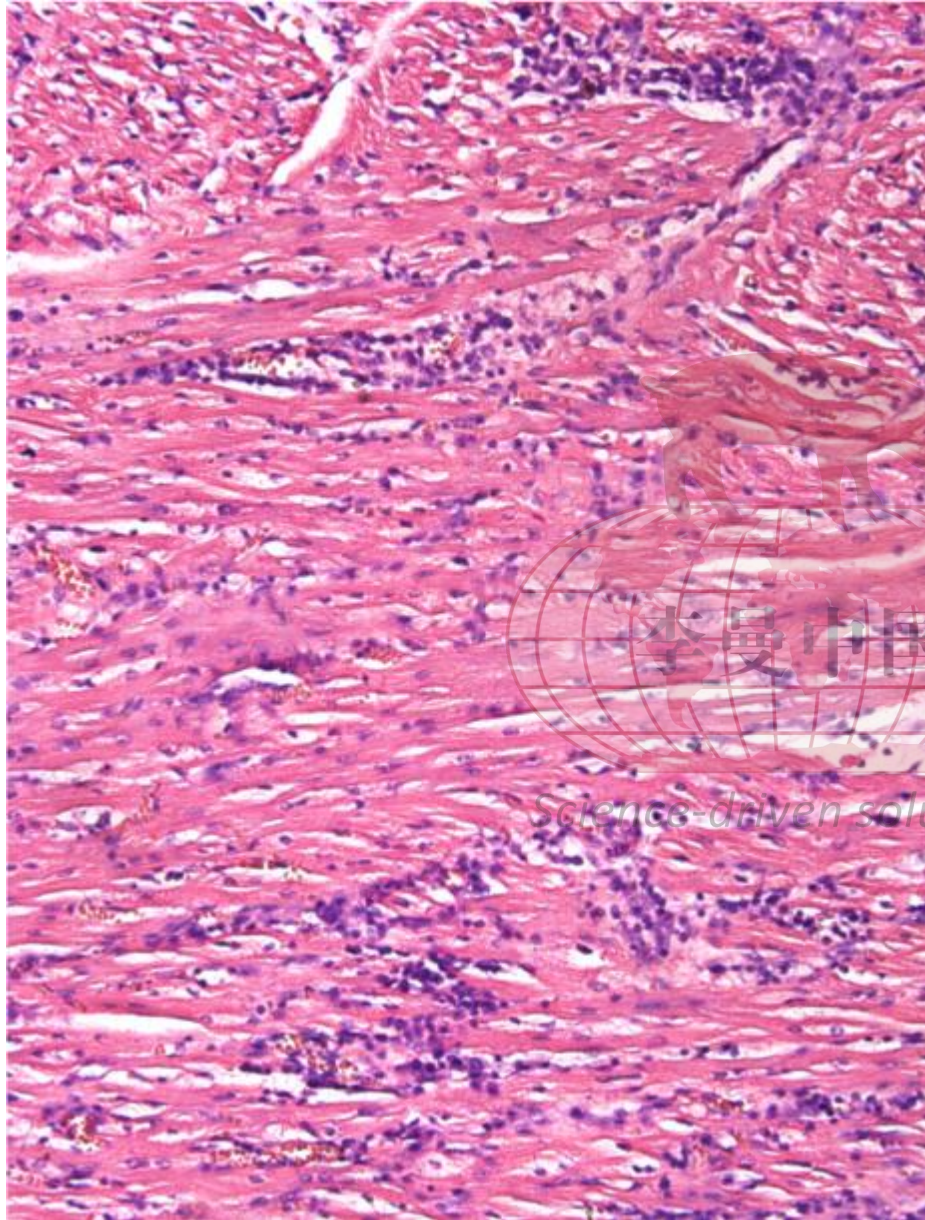




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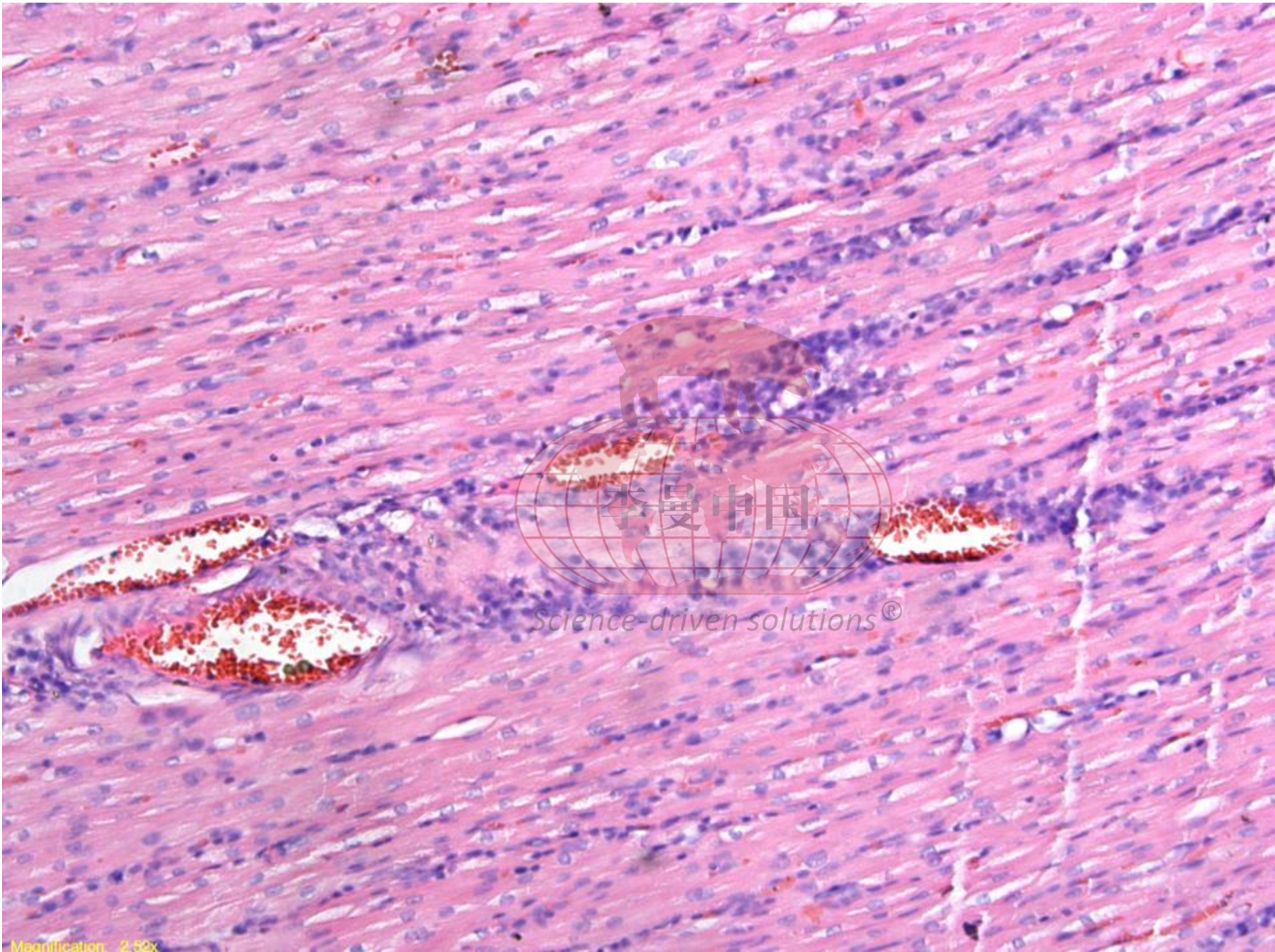


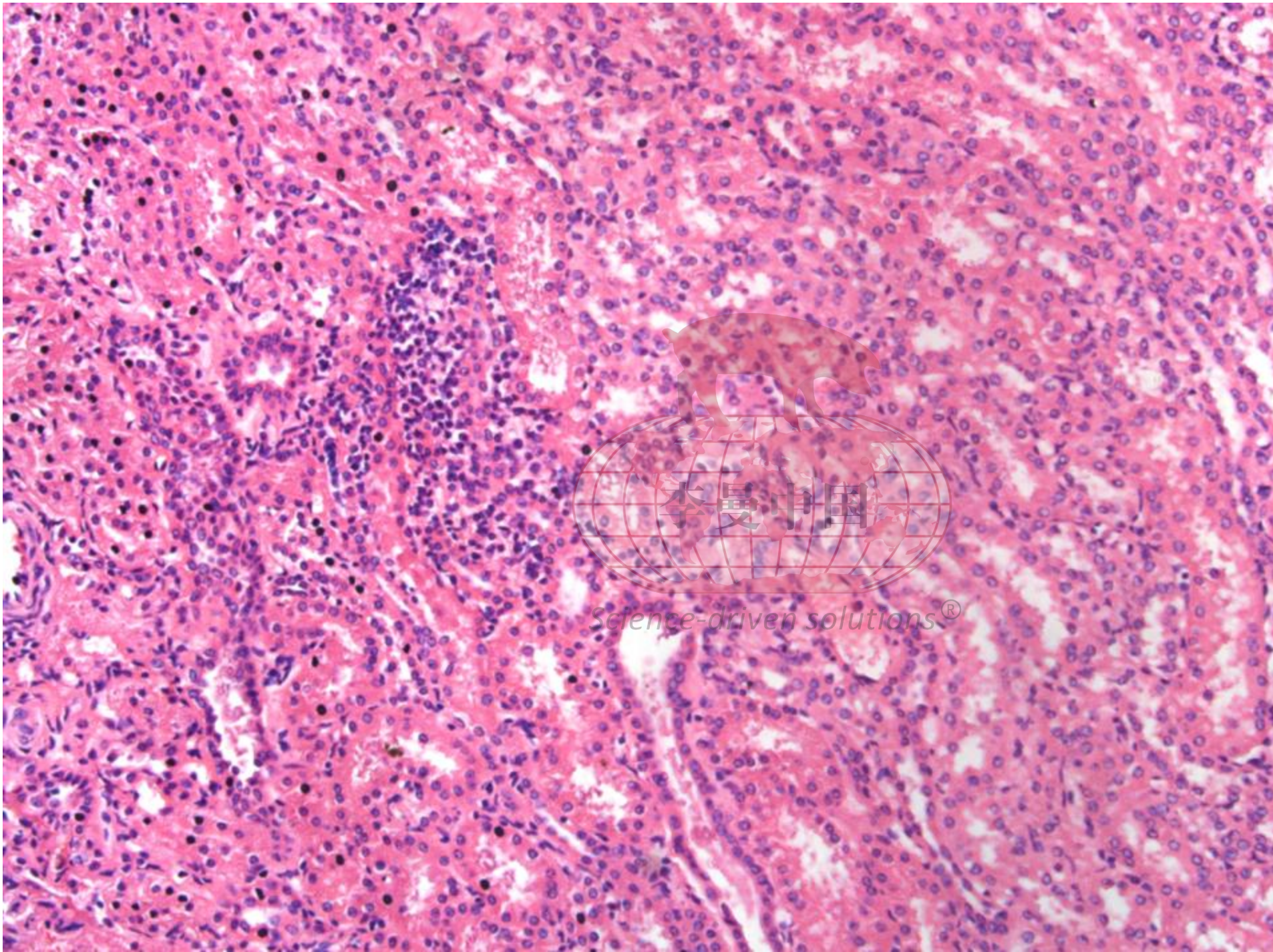
PCV2 lymphnode granuloma, intracytoplasmic inclusions



PCV 3

PCV 3





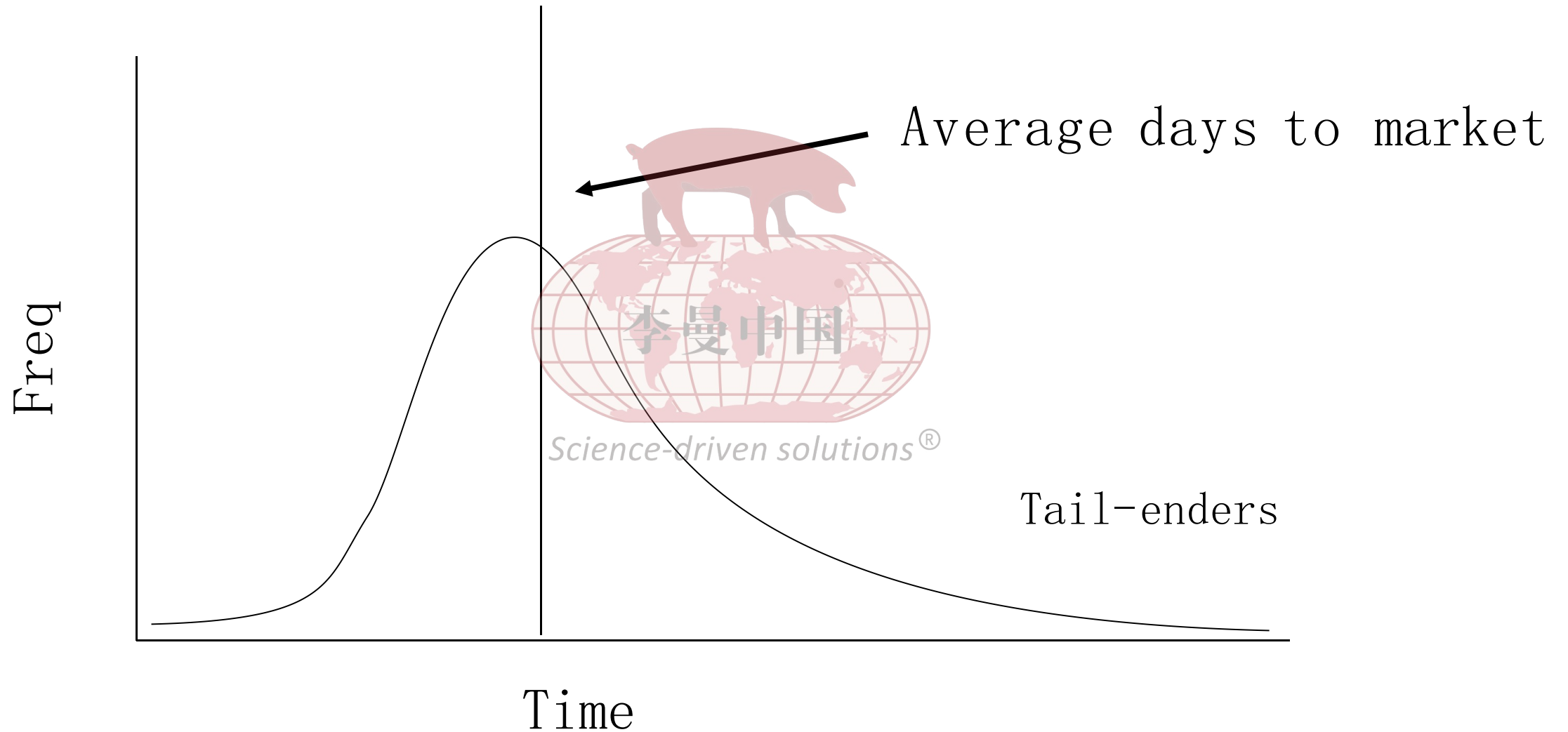
PCV 3

PCR on fresh tissue

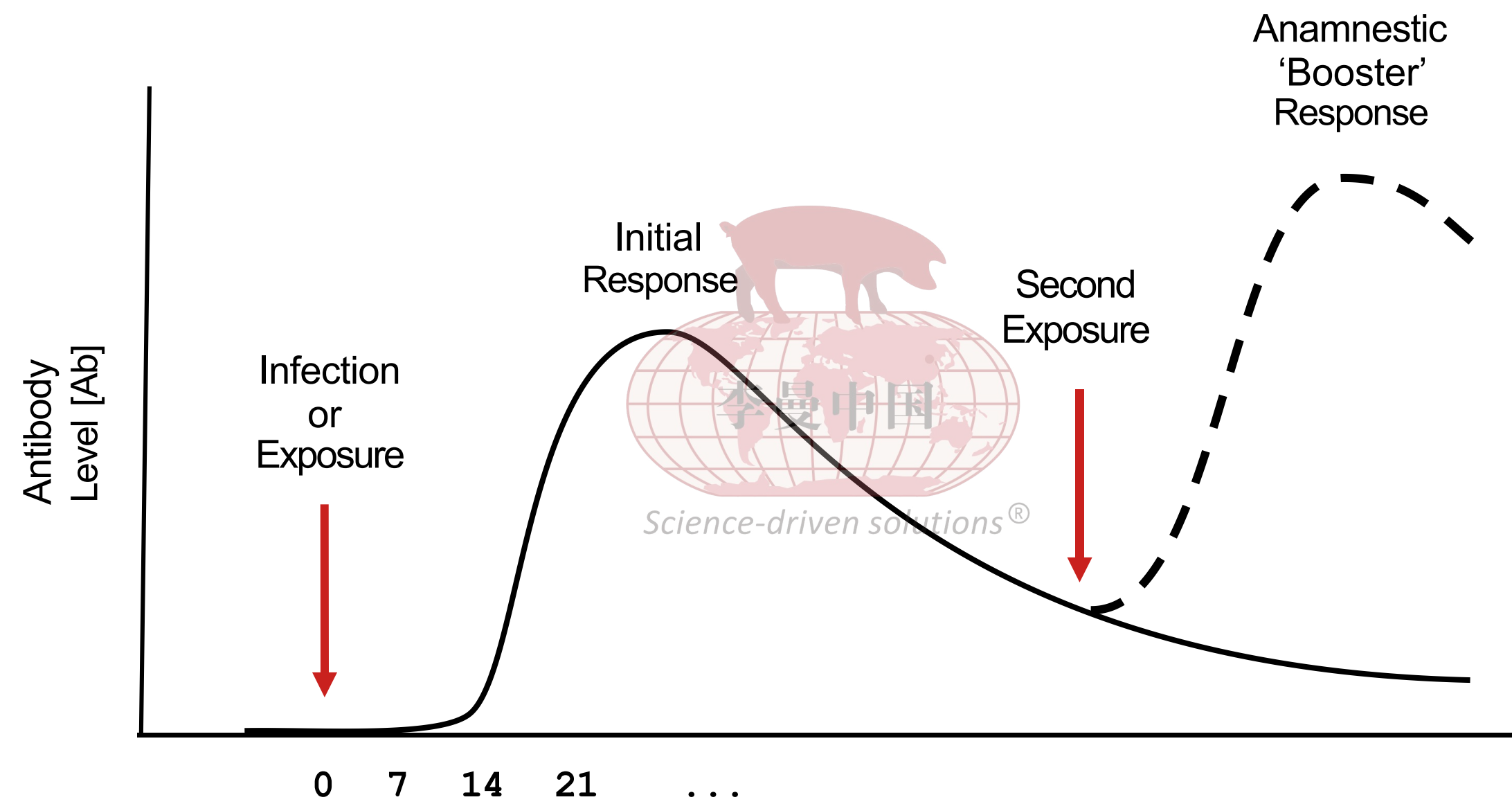
Serial No.	Samples ID	PCV2	PCV3	PEDV	PoRV
1	1 线	++	+	NEG	NEG
2	3 线-1	+	+++	NEG	NEG
3	3 线-2	+	+++	NEG	NEG
4	4 线-1	NEG	NEG	NEG	NEG
5	4 线-2	NEG	NEG	NEG	NEG
6	5 线	NEG	++	NEG	NEG
7	6 线-1	++	++	NEG	NEG
8	6 线-2	+	++	NEG	NEG

Variability?

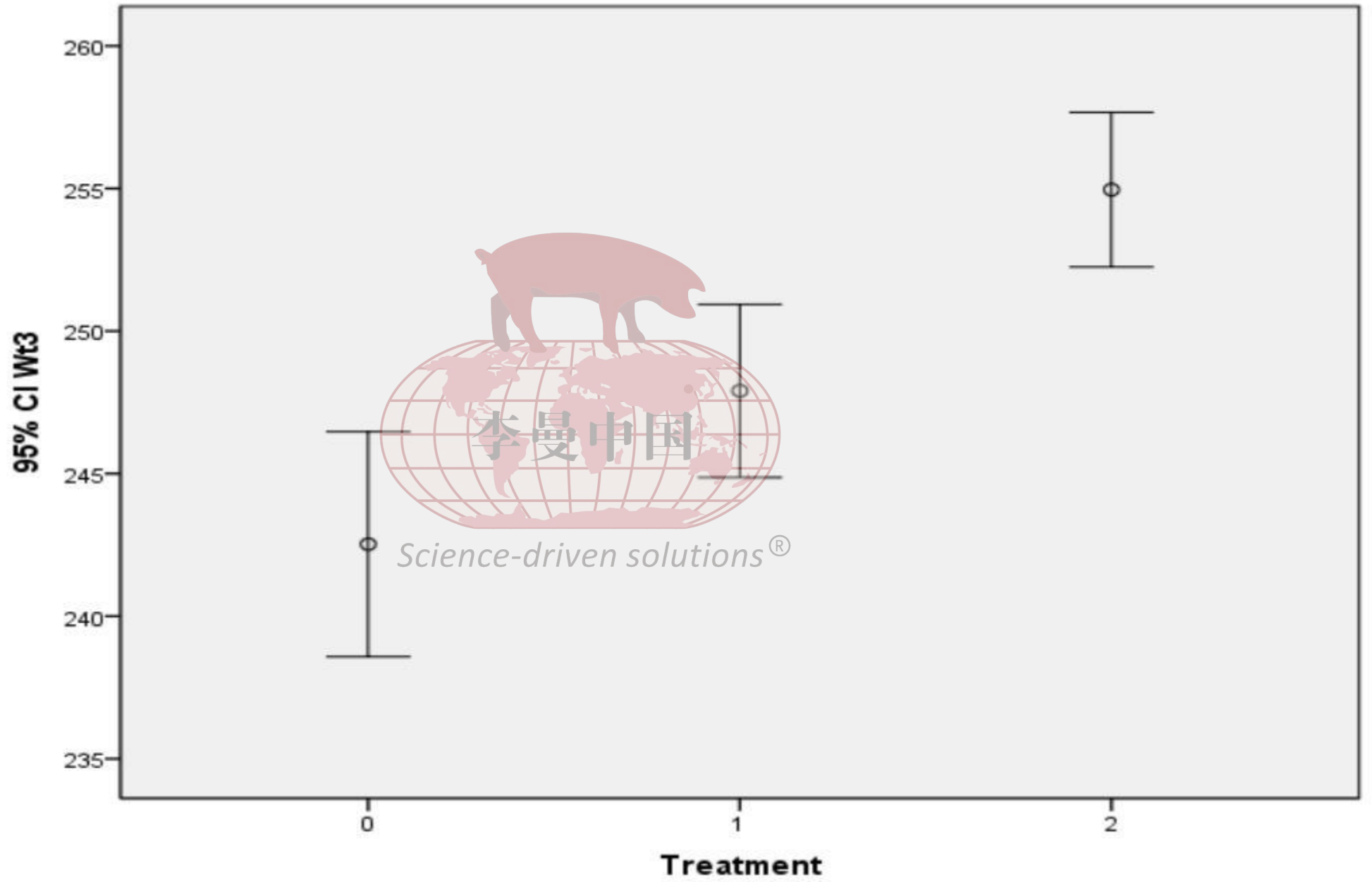
Waiting time to Success



Humoral Immune Response Model



PCV



PCV Summary

PCV2 is nearly ubiquitous in the swine industry worldwide

PCV3 is an Emerging Problem with similar signs and reproductive sequelae

Serology is of little value for PCV

Diagnosis essential

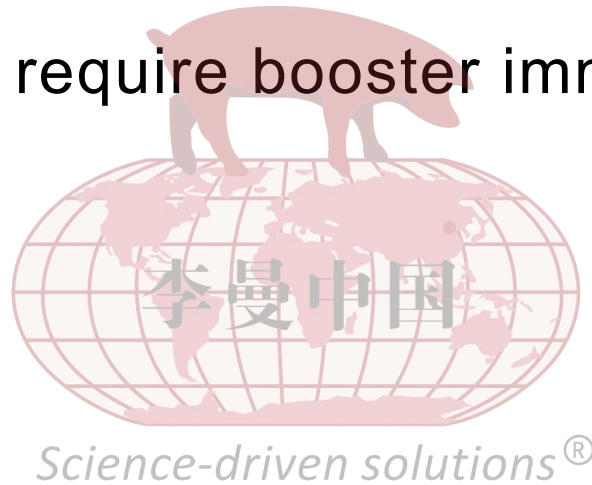


PCV Summary

Vaccination can be effective. Strain specific vaccines are more effective.

Killed and subunit vaccines require booster immunization.

Vaccinate sows and piglets



Porcine Calicivirus (Sapovirus)

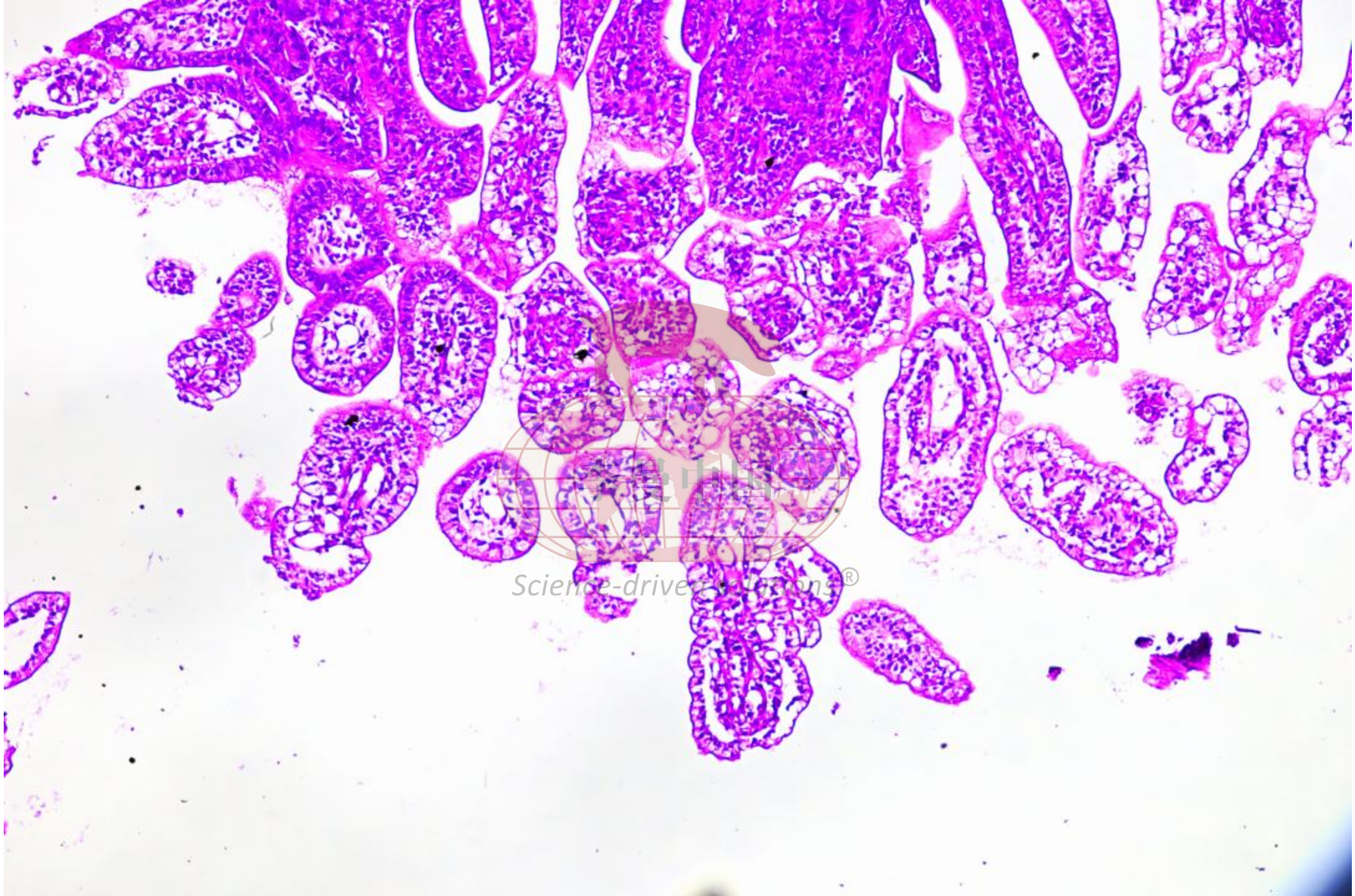
Norwalk virus of humans; “Winter vomiting disease”

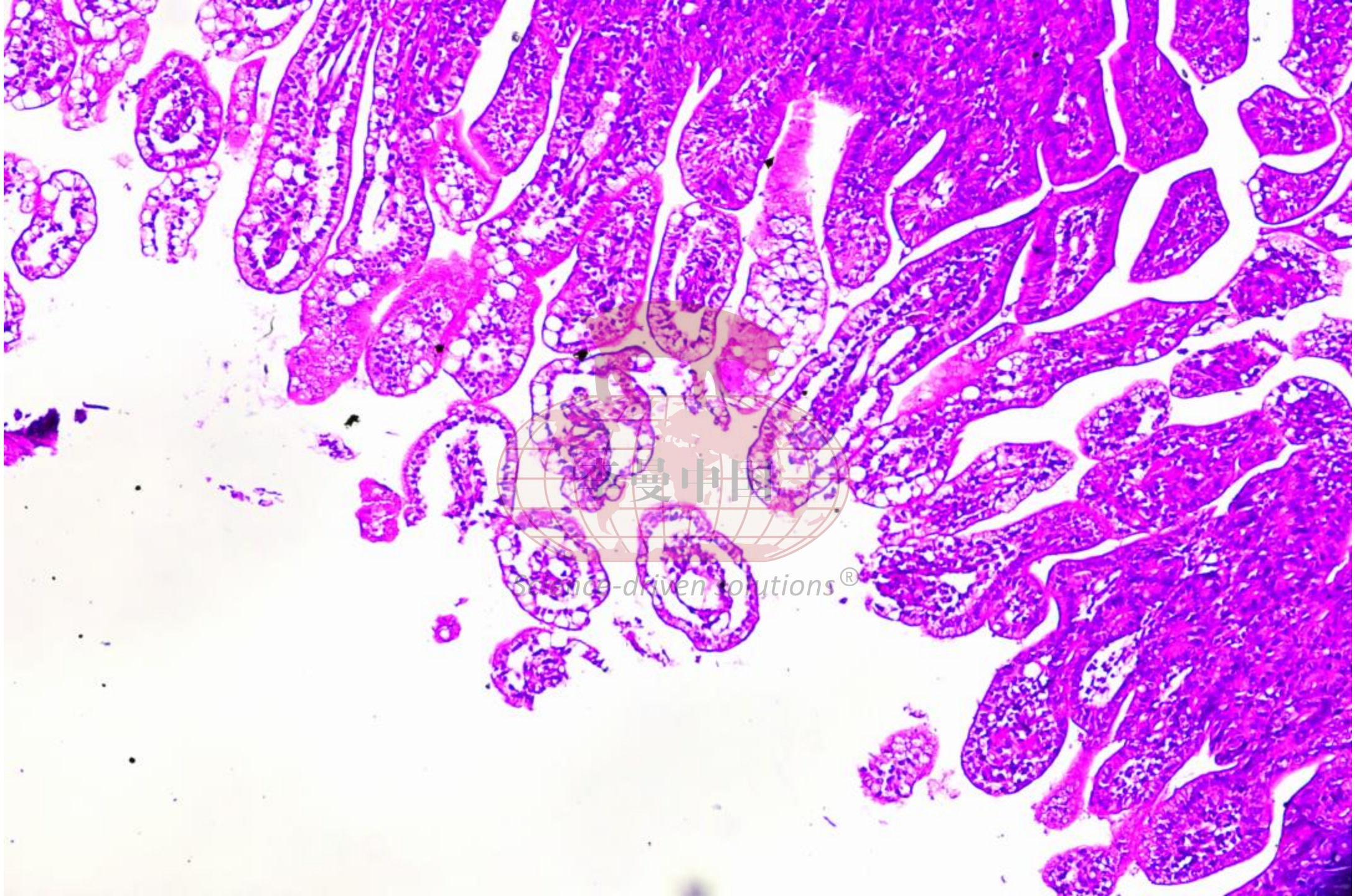
Norovirus – about 20% of human diarrhea cases.

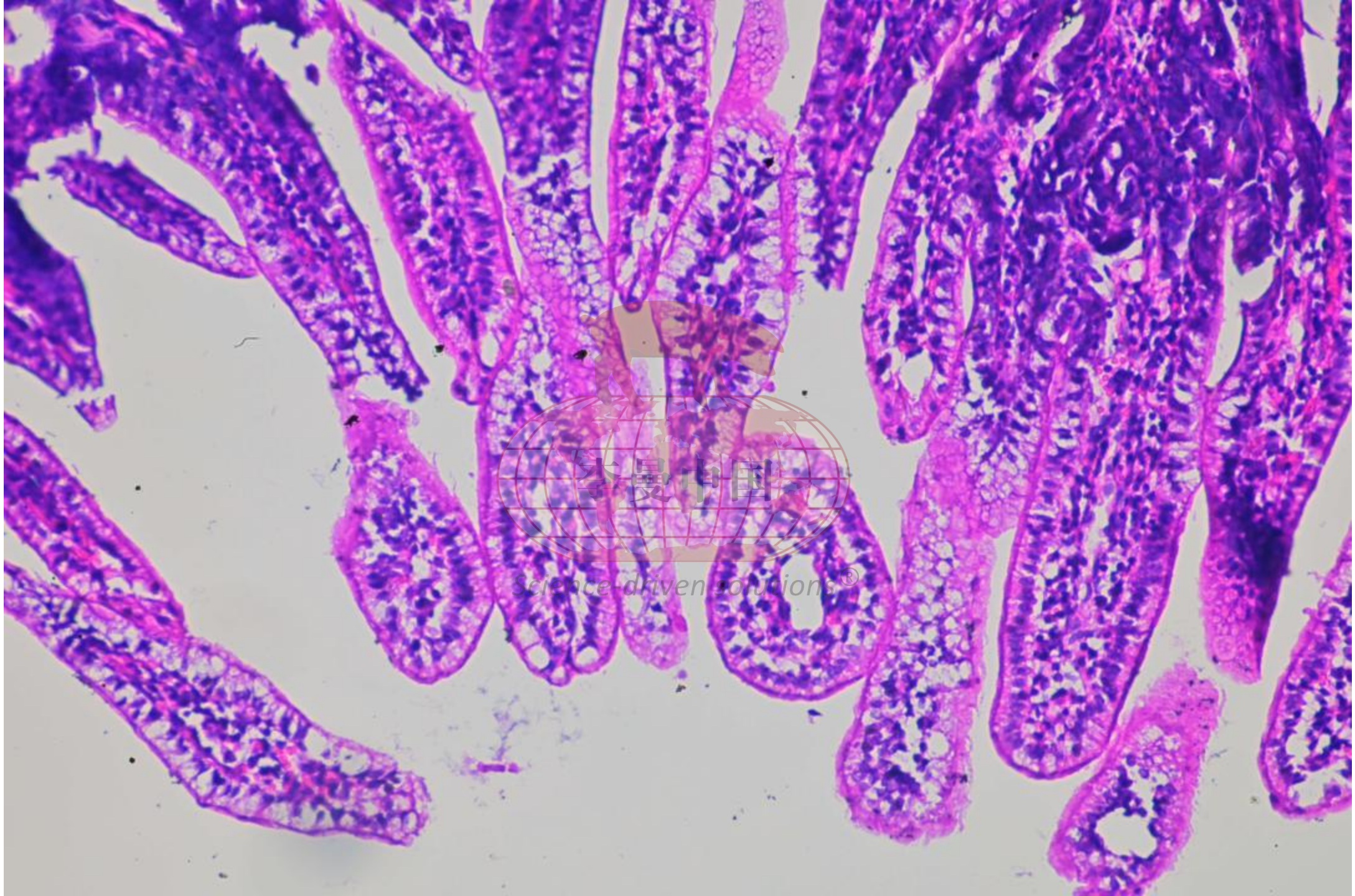
(Sapovirus - after Sapporo, Japan.)



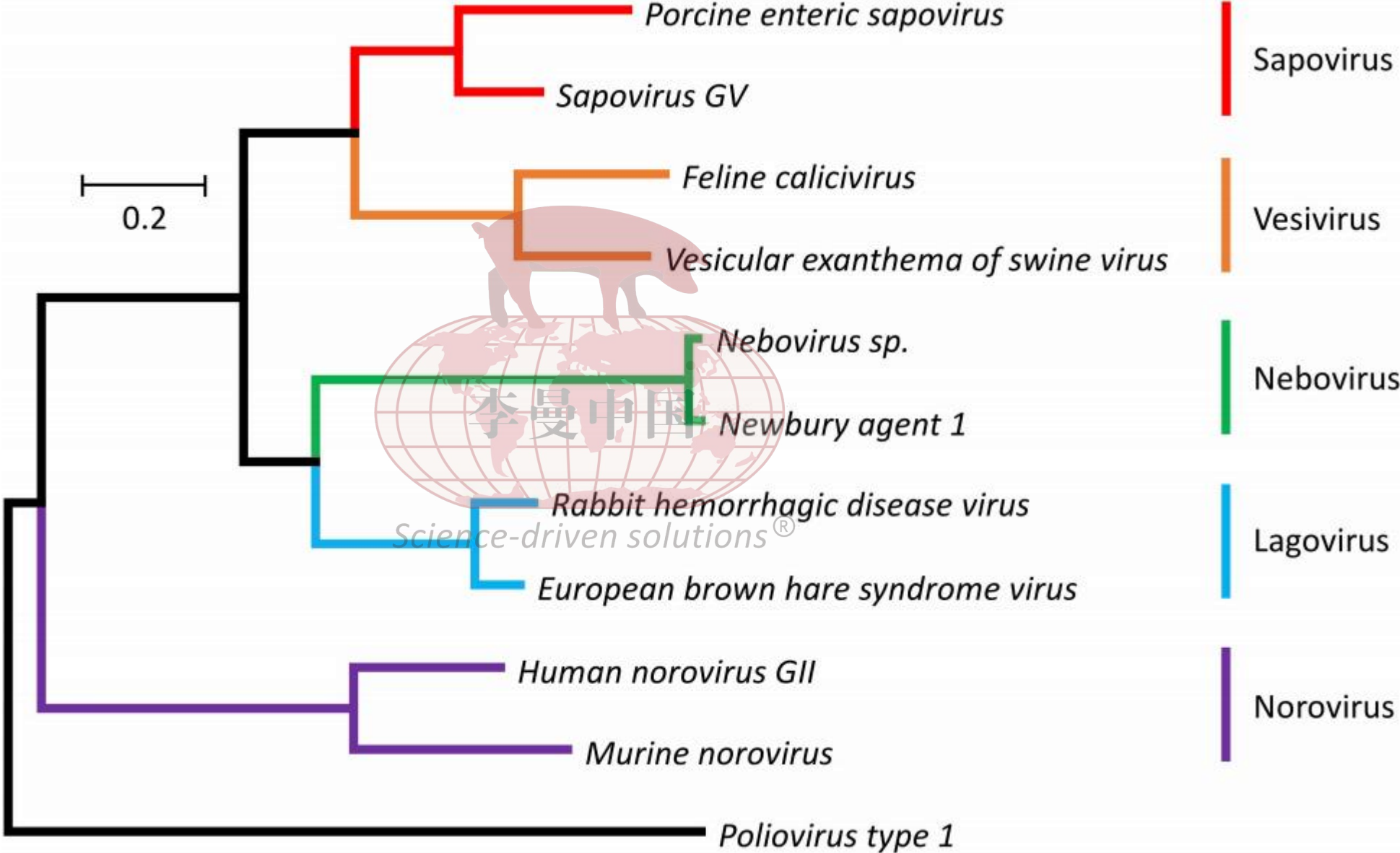
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Calicivirus



Porcine Calicivirus (Sapovirus)

Diagnosis

Control concurrent disease such as E. coli

Control lactation problems

“Mop-water” Feedback to gilts.

RNA & Protein subunit vaccine.



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APPV Atypical Porcine Pestivirus

Pestivirus K

Not closely related to CSF virus or BVD virus.

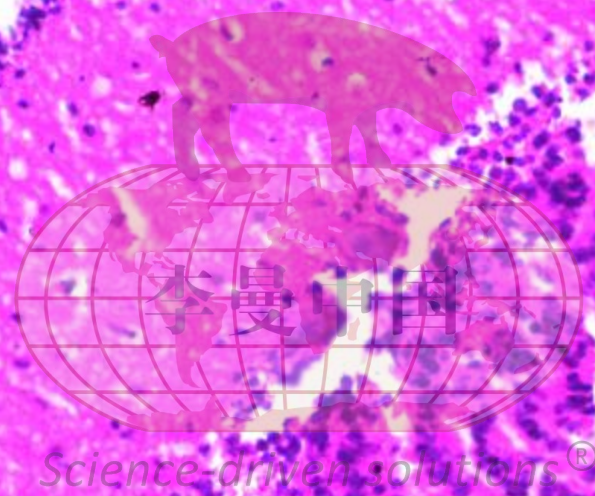
Shaker pig syndrome

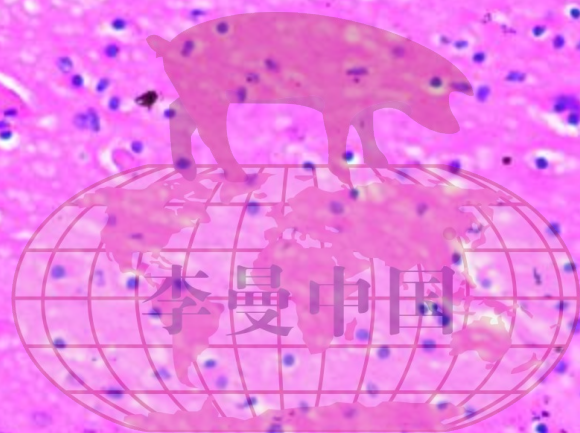
Diarrhea, poor weaning weights, fever $>40^{\circ}\text{C}$

Can resemble low virulence CSF



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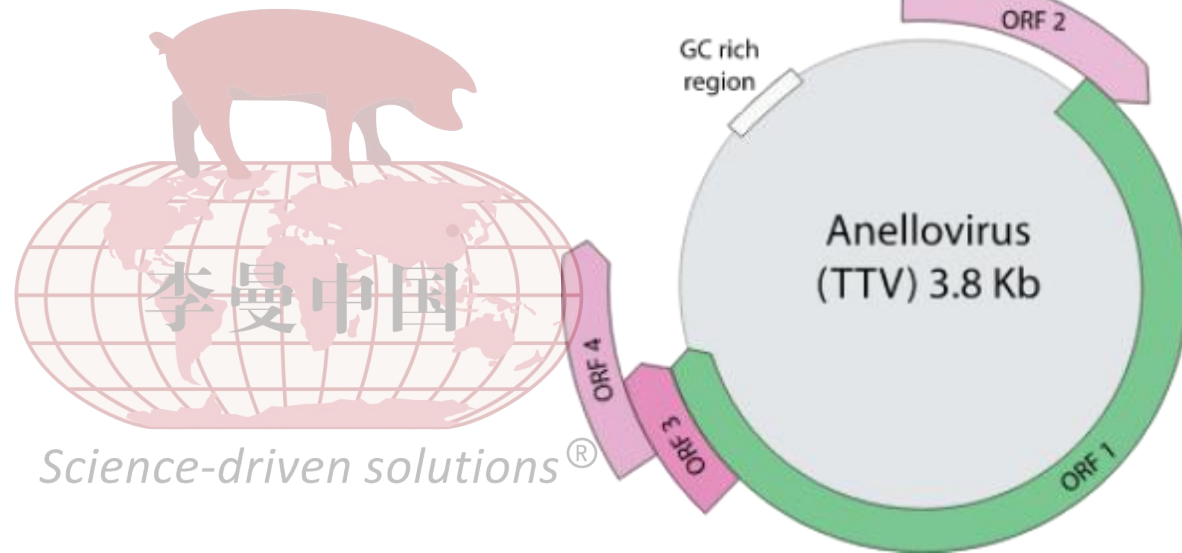
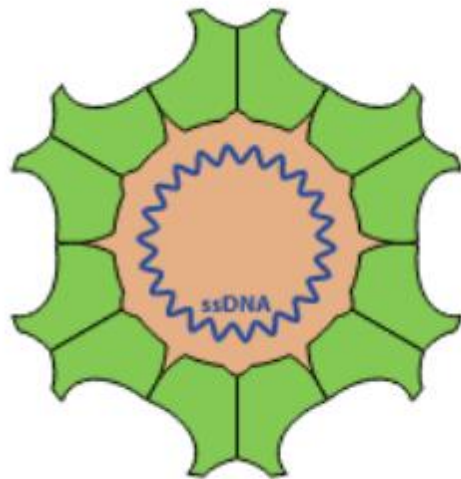




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Torque Teno Sus Virus TTSuV



“Torque Teno Sus” Virus TTsuv

Single strand DNA virus ~3000 bp

TTsuv1 TTsuvk2

Interstitial Pneumonia

Lymphoid depletion

Immunodeficiency – Interaction with PCV2/PCV3

Abortion



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Replacement animals

Negative for PRRS (serology or PCR)

Negative for Pseudorabies (serology)

NO Persistent Infection with CSF (PCR or FA Antigen Test)

Isolation at least 60 days

Controlled Exposure ← ← ←

