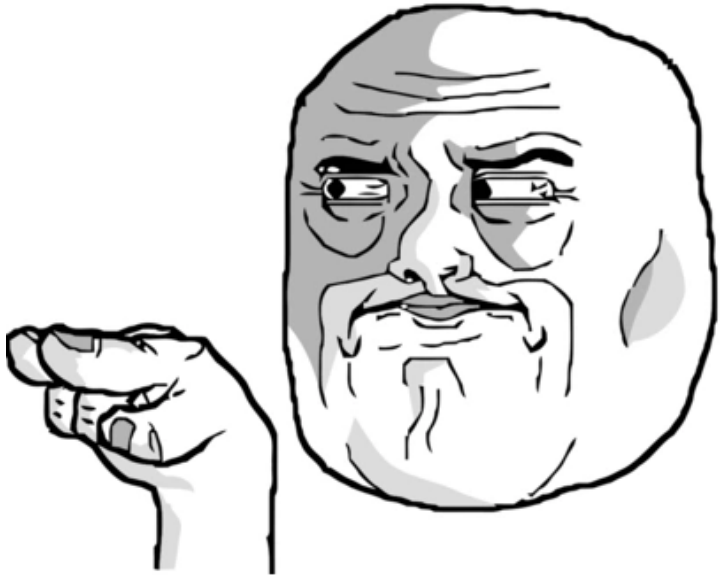

I ‘M STILL WATCHING YOU

“ASF รู้ทัน ป้องกันได้”

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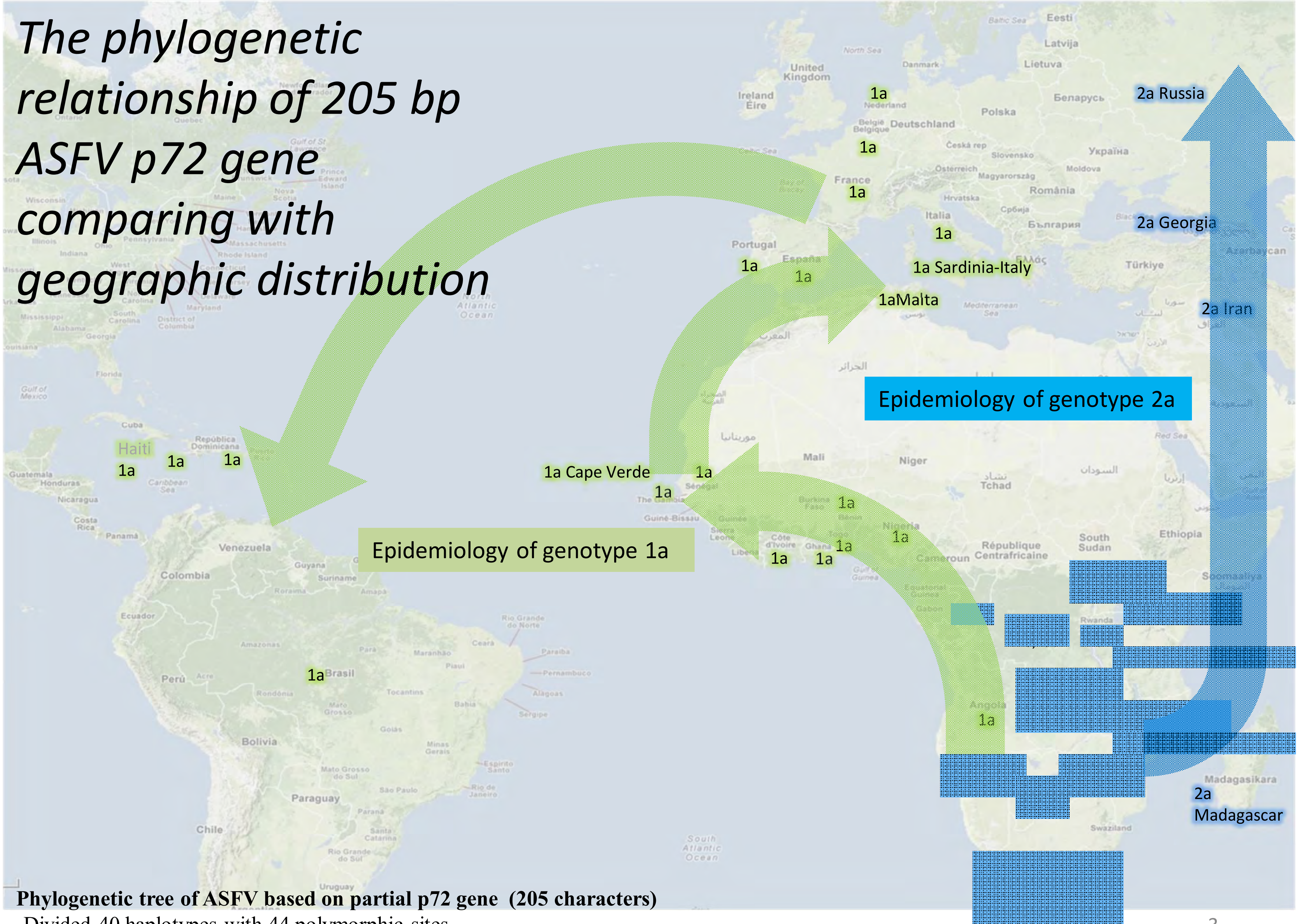
Dept. of Farm animal resources and production medicine
Kamphangsaen Veterinary Diagnosis Center
Faculty of Veterinary Medicine, Kasetsart University

TABLE 1 *ASFV incursions into Eurasia as of September 2017*

Year	Country	Genotype	Source of introduction	Status
1957	Portugal	I	From West Africa	Eradicated
1960	Portugal	I	After reintroduction into Portugal, ASF spread to several countries in Europe	Eradicated in the 1990s, except for the Island of Sardinia (Italy) where it was introduced in 1978 and became endemic
1967	Italy	I		
1969	Spain	I		
1977	France	I		
1978	Malta	I		
1985	Belgium	I		
1986	The Netherlands	I		
2007	Georgia, Armenia, Russian Federation	I	Georgia was likely infected from southeastern Africa while outbreaks in Armenia and the Russian Federation resulted from further incursions from Georgia	Not eradicated; endemicity likely
2008	Azerbaijan, Iran	II		Eradicated
2012	Ukraine	II	Most likely spread from the Caucasus	Not eradicated
2013	Belarus	II		
2014	Lithuania, Poland, Latvia, Estonia	II	Probably introduced from Belarus although the outbreak was not officially reported	Not eradicated
2017	Moldova, Irkutsk (RF), Czech Republic, Romania	II	Progressively spread east and westward	Not eradicated

The phylogenetic relationship of 205 bp ASFV p72 gene comparing with geographic distribution



Phylogenetic tree of ASFV based on partial p72 gene (205 characters)
-Divided 40 haplotypes with 44 polymorphic sites
(GenBank updated 01JUN2012) more than 350 sequences

205 bp--*King et al., 2003*

Transmission mode

Routes of infection Four routes of infection with ASFV are recognized:

(i) contact between sick and healthy animals

(ii) ingestion of infected meat

(iii) tick bites or bites from other vectors

(iv) fomites

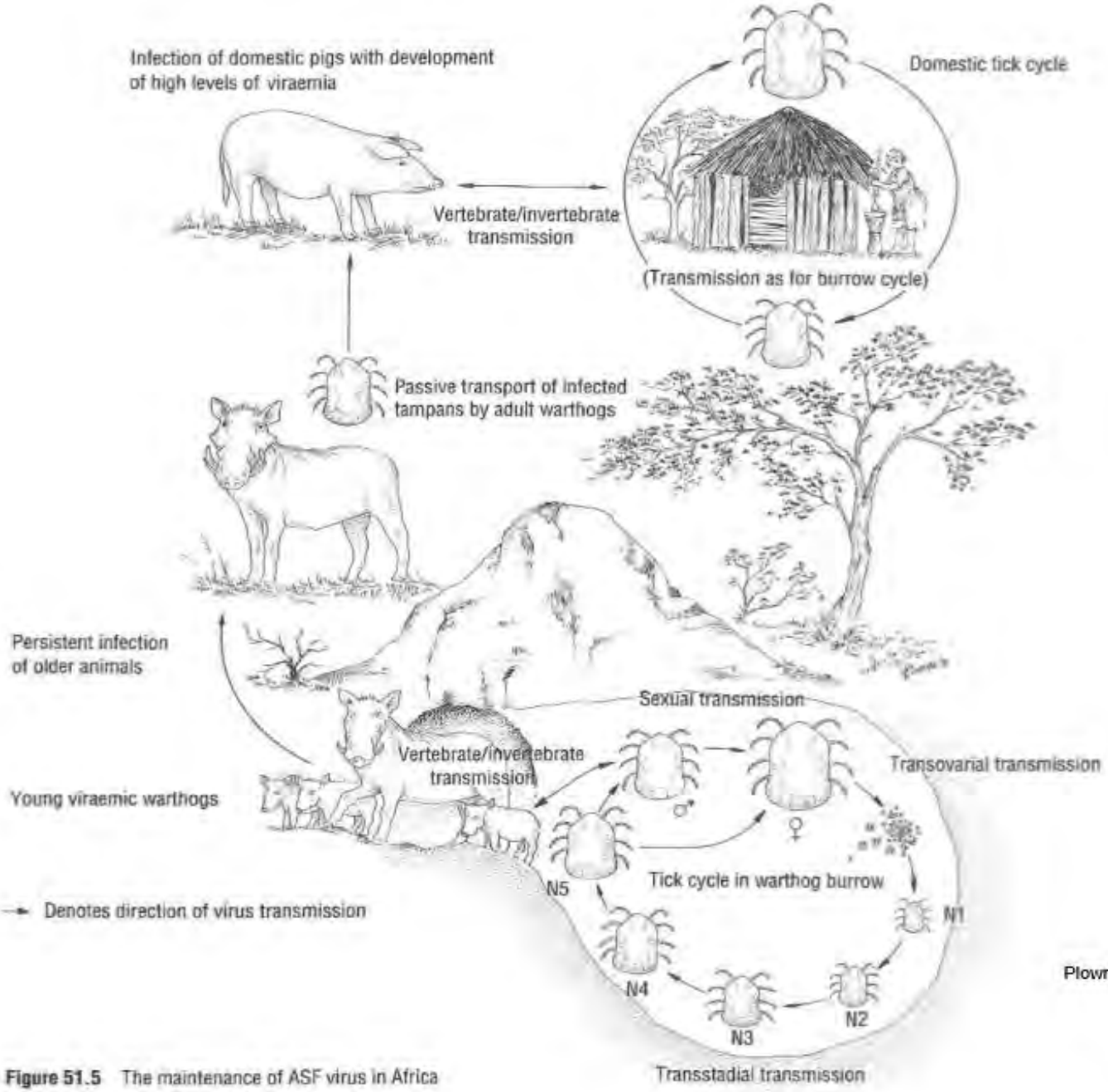
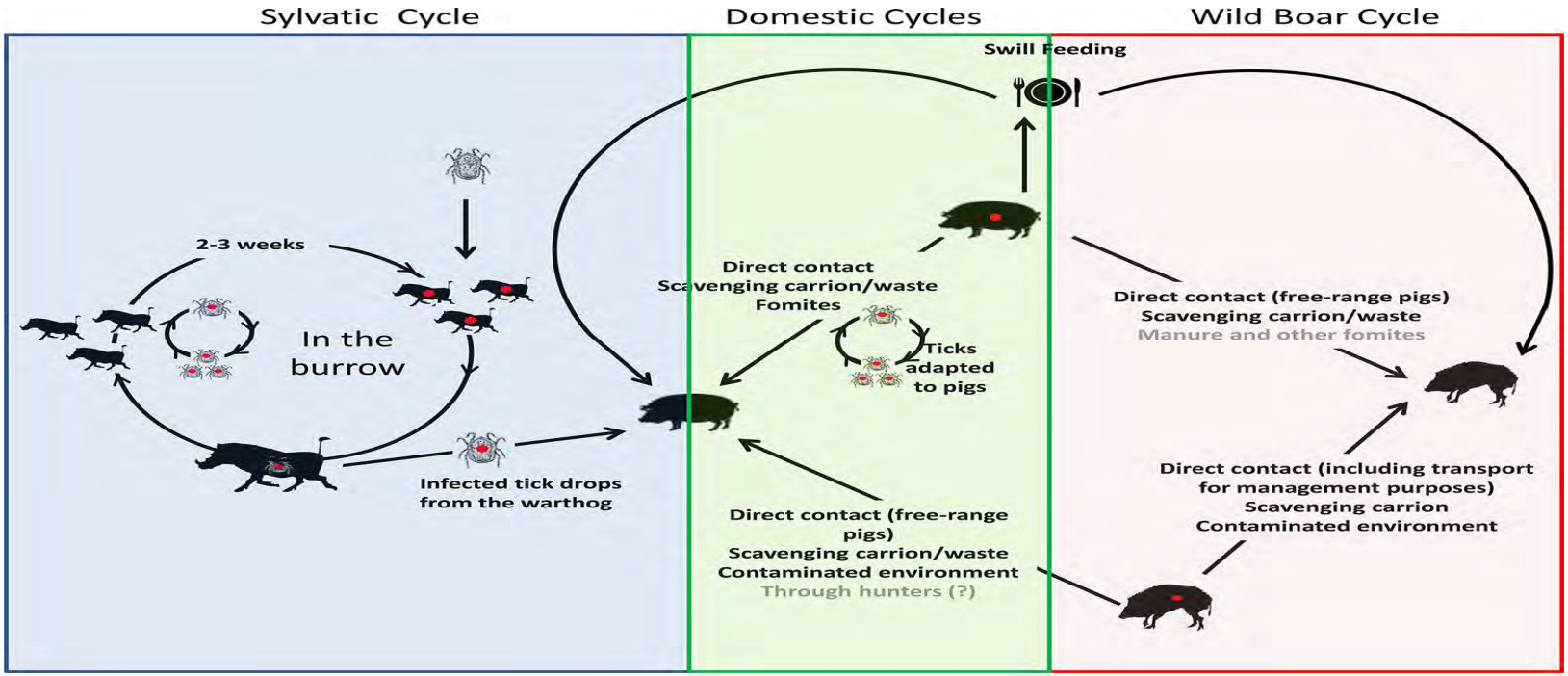


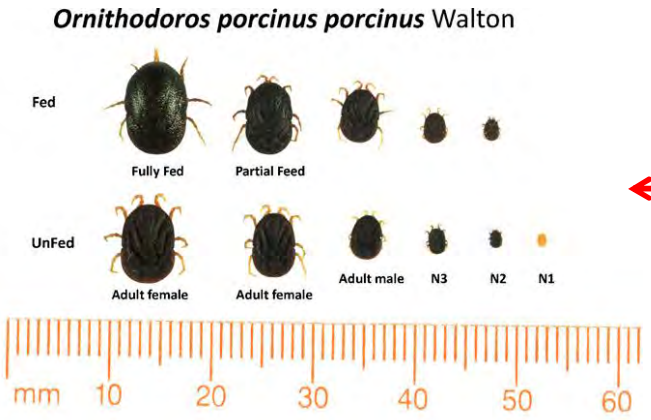
Figure 51.5 The maintenance of ASF virus in Africa

Plowright, W., Thomson, G.R. & Neser, J.A. (1994). African swine fever. I: Coetzer, J.A.W., Thomson, G.R. & Tustin, R.C. (red.) Infectious diseases in livestock with special reference to Southern Africa

African wild suids, soft ticks and domestic pigs

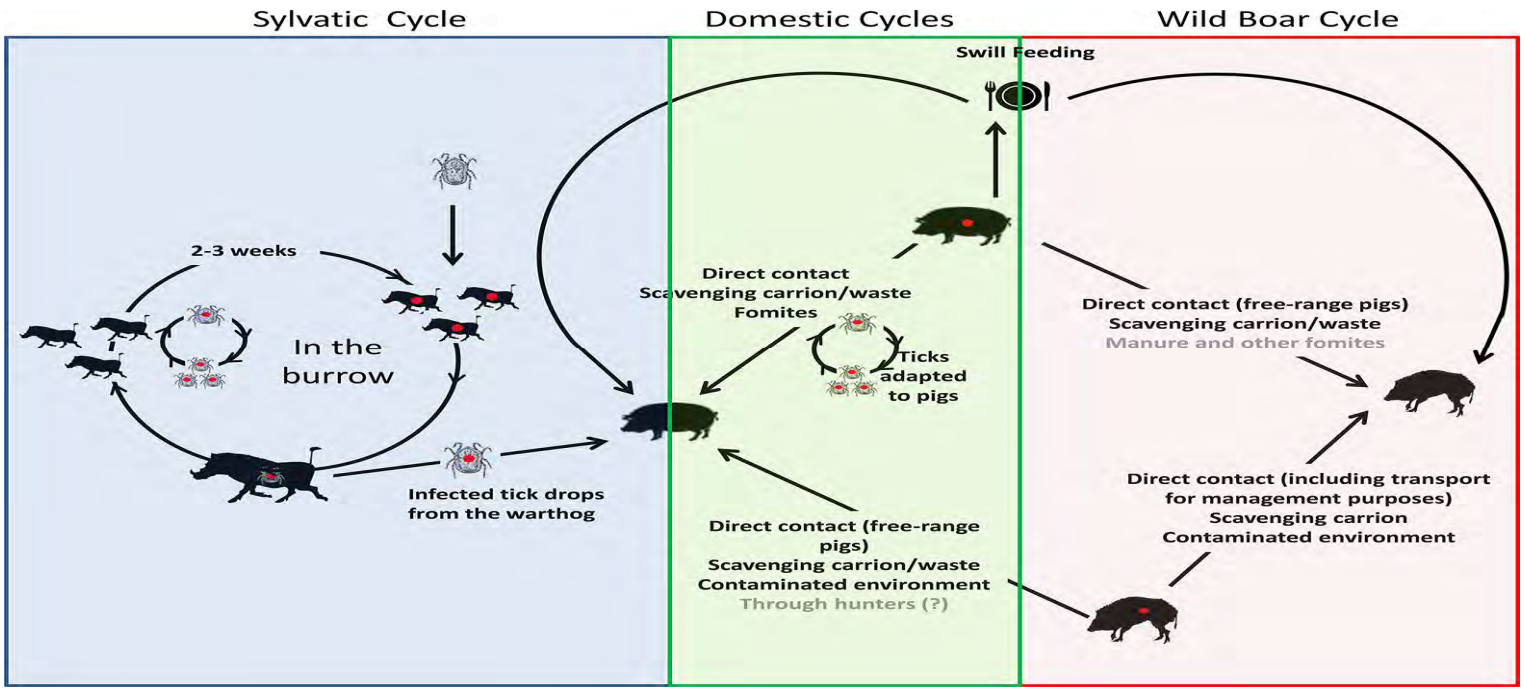
- e.g. Southern and Eastern Africa
- transmission is mainly caused by the occasional bites of infected ticks




Ornithodoros porcinus porcinus Walton
Fed
Fully Fed
Partial Feed
UnFed
Adult female
Adult female
Adult male
N3
N2
N1
mm 10 20 30 40 50 60

Domestic pigs and soft ticks

- e.g. Southern Africa, Mozambique, Zambia
- ASF is maintained in domestic pig
- soft ticks maintained in the pig pens



Penrith, 2013

Domestic pigs, wild boar and soft ticks

- e.g. Iberian Peninsula
- main routes of transmission = direct contact between animals and ingestion of infected meat
- *O. erraticus* >> outdoor pig production systems
- *O. erraticus* >> long-term reservoir of ASFV

Penrith, 2013

Domestic pigs

- e.g. West Africa, Central and South America
- mainly through >> i) direct contact, ii) pig movements, iii) contaminated fomites, iv) infected meat

Domestic pigs and wild boar

- e.g. Sardinia, Caucasus, Eastern Europe
- mainly by interaction between domestic pigs and wild boar
- ticks are not known to play a role
- caused by human activities

https://bnn-news.com

http://meatcommerce.com/news

http://dallastrinitytrails.blogspot.com

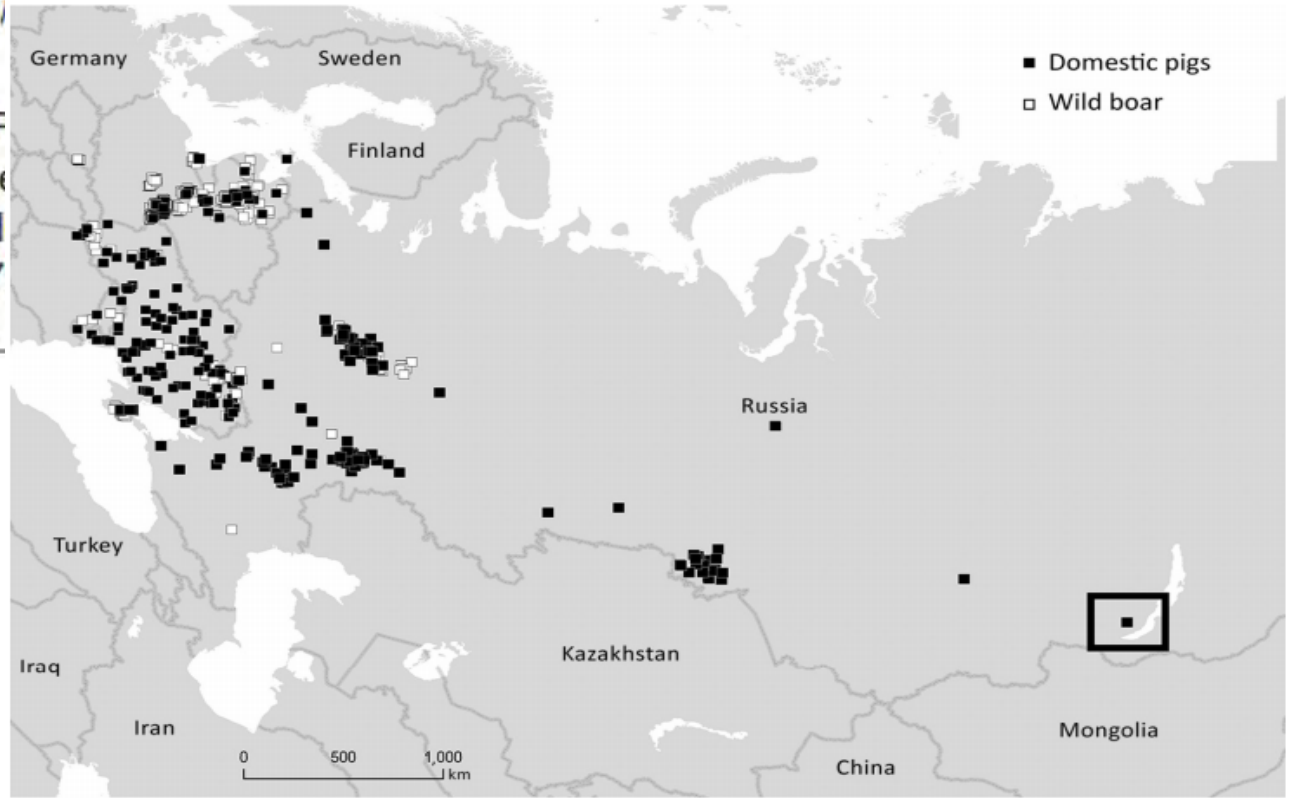
African Swine Fever Virus, Siberia, Russia, 2017

Denis Kolbasov, Ilya Titov, Sodnom Tsybanov, Andrey Gogin, Alexander Malogolovkin

Author affiliation: Federal Research Center for Virology and Microbiology, Pokrov, Russia

DOI: https://doi.org/10.3201/

African swine fever (ASF
and emerging swine dise
problem for the swine ind
sia was reported in 2007
Siberia, Russia, in 2017.



Outbreak ???

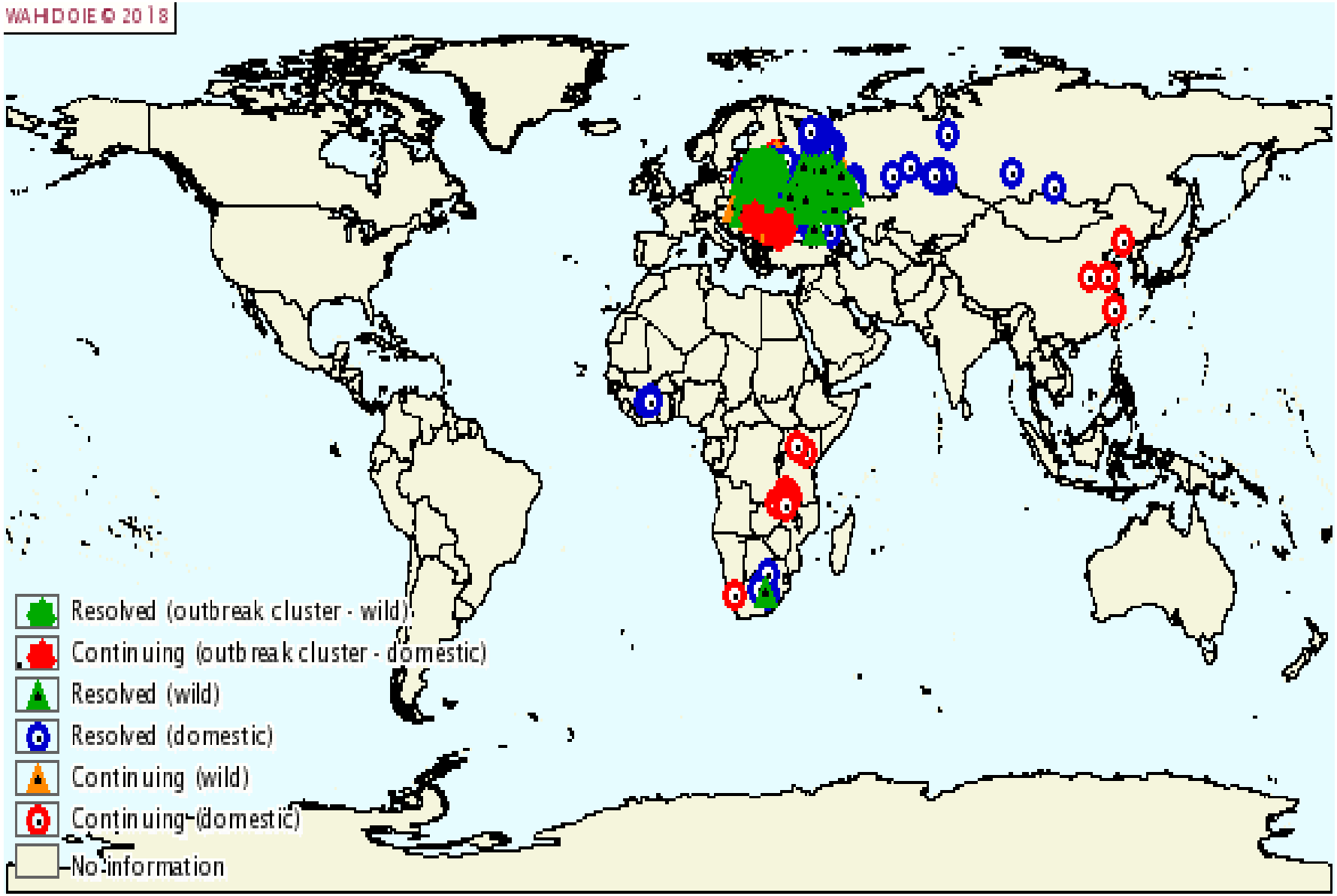
- Backyard farm
- Irkutsk (ASFV/ Irkutsk/dom/2017)
- Genetic = genotype II (P72)/IGRI variant
- But recent ASF outbreaks in European Russia and eastern Europe = IGRII variant ???
- ASFV/ Irkutsk/dom/2017 similar to ASFV/Georgia/wb/2007 (rare in Russia)
- ASFV-contaminated pork products >> major risk
- Farmer use leftovers to feed pigs

African Swine Fever Virus Isolate, Georgia, 2007

Rebecca J. Rowlands, Vincent Michaud, Livio Heath, Geoff Hutchings, Chris Oura, Wilna Vosloo, Rahana Dwarka, Tinatin Onashvili, Emmanuel Albina, and Linda K. Dixon

Fig. 2: Distribution of first reported cases of ASF in Georgia *(source: OIE)*

The first case of ASF in Georgia was observed in the Samegrelo region on the west coast, which suggests a possible connection to the port of Poti on the Black Sea. One possibility is that that the virus entered Georgia through [redacted] However, several events would be required to cause an outbreak, making this a relatively rare event and providing an explanation for the relatively few incidents of transcontinental spread of ASFV. Our analysis showed that the Georgia strain is most similar to isolates from Madagascar. However, since few ASFV samples are



Outbreak reports; 01/10/2017 - present

African swine fever outbreak in China: Deadly ASF SPREADING

AN outbreak of African swine fever (ASF) in China's hogs is probably bigger than what has been reported publicly, U.S. Agriculture Secretary Sonny Perdue said on Thursday.

PUBLISHED: 20:44, Thu,

Article type : Outbreak Alerts

Emergence of African Swine Fever in China, 2018

Xintao Zhou[1,a], Nan Li[1,a], Yuzi Luo[2,a], Ye Liu[1], Faming Miao[1], Teng Chen[1], Shoufeng Zhang[1], Peili Cao[2], Xiangdong Li[3], Kegong Tian[3,4]*, Huaji Qiu[2]*, Rongliang Hu[1]*

all of the pigs fed table scraps in a farm near Shenyang City in Liaoning province (Figure1) suffered from acute clinical and pathological signs, including high fever, dullness, generalized reddening of the skin, obvious enlargement of the spleen, and congestion and generalized

HEALTH NEWS AUGUST 29, 2018 / 5:55 AM / 2 DAYS AGO

China says African swine fever outbreaks originated outside the country

EMERGING INFECTIOUS DISEASES®

CDC > EID journal > Volume 24 > Ahead of Print / In Press

Volume 24, Number 11—November 2018

Research Letter

Molecular Characterization of African Swine Fever Virus, China, 2018

Shengqiang Ge[1], Jinming Li[1], Xiaoxu Fan[1], Fuxiao Liu[1], Lin Li[1], Qinghua Wang, Weijie Ren, Jingyue Bao, Chunju Liu, Hua Wang, Yutian Liu, Yongqiang

lao, China

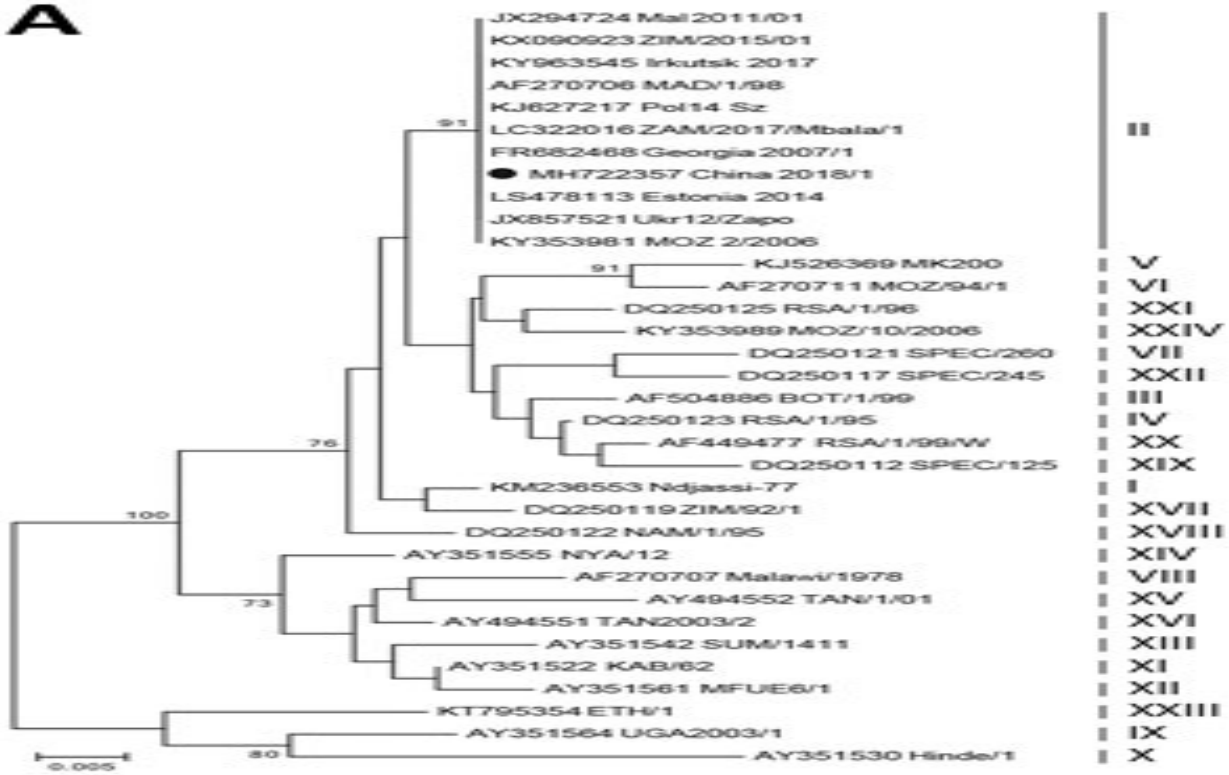


TABLE 3 *Resilience of ASFV in various environmental conditions*

Item	ASFV survival time
Meat with and without bone and ground meat	105 days
Salted meat	182 days
Cooked meat (minimum of 30 minutes at 70 °C)	0
Dried meat	300 days
Smoked and deboned meat	**30 days**
Frozen meat	**1 000 days**
Chilled meat	**110 days**
Offal	**105 days**
Skin/Fat (also dried)	**300 days**
Blood stored at 4 °C	**18 months**
Faeces at room temperature	**11 days**
Putrefied blood	**15 weeks**
Contaminated pig pens	**1 month**

Source: Beltran-Alcrudo et al., 2017

How to kill ASF?

- inactivated by heat treatment at 70°C for 30 minutes
- inactivated by many solvents that disrupt the viral envelope
- e.g. 1% formaldehyde in 6 days, 2% NaOH in 1 day
- Paraphenylphenolic disinfectants are very effective

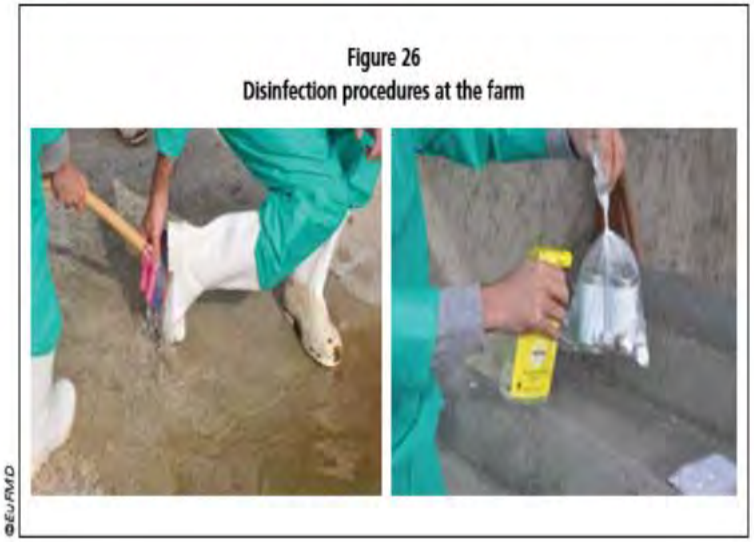
Inactivating the ASF virus in swill

Cooking swill (abattoir leftovers) prior to feeding to pigs in Kiambu, Kenya

ที่มา: FAO

70°C for 30 minutes !!!!

Biosecurity is important



FAO

Restocking and Sentinel pig


ที่มา: FAO

Martınez-Aviles, 2018

- cleansing and disinfection >>> recommend twice
- should not be restocked for at least 40 days following above procedures
-sentinel pigs should be used >>> at least 6 weeks
- monitor >> clinical sign and serology

Stamping out

ที่มา: FAO

Practice for emergency case

https://www.gettyimages.dk

Sampling strategy

- **Outbreak!!** >>> sick and dead animals
- **Active surveillance** >>> old animal

Type of samples

- Whole blood >>> **EDTA tube** (purple)
- Serum >>> **Coagulated tube** (red)
- Organ >>> **spleen**, **lymph nodes**, liver, tonsil, heart, lung, and kidney

Food and Agriculture Organization of the United Nations

March 2018

ANIMAL HEALTH RISK ANALYSIS — ASSESSMENT No. 05

AFRICAN SWINE FEVER THREATENS PEOPLE'S REPUBLIC OF CHINA

A rapid risk assessment of ASF introduction

SUMMARY

- In March 2017, ASF was reported in Irkutsk, Russian Federation, thousands of kilometres away from previously reported outbreaks and at approximately 1 000 km from the border with China. Entry of ASF into China would have devastating consequences for animal health, food safety, and food security, and raise the possibility of further spread to Southeast Asia including the Korean Peninsula and Japan.
- The FAO rapid risk-assessment framework and methodology was discussed with swine disease experts attending the Second Regional Workshop on Swine Disease Control in Asia (China Workshop, 2017).
- The experts participating in this rapid risk assessment considered transport-associated routes (TARs) as most relevant pathways of ASF introduction into China, followed by illegal imports of food and by Chinese workers working abroad.
- China's northeastern region (Heilongjiang province) is where ASF is most likely to be introduced, followed by Inner Mongolia.
- Wild boar population density is the most relevant factor in the spread of the disease.
- The most likely regions for ASF spread are the northeast (Heilongjiang), followed by the central eastern area (Henan, Shanxi, Anmui, and Hubbei) and the southeast (Hunan). Surveillance for swine diseases in this region should be heightened.
- ASF is most likely to persist and become endemic due to the presence of wild boar populations interacting with susceptible domestic species, and lack of biosecurity in smallholdings. However, due to restrictions on hunting in China, hunters are not likely to affect the spread and persistence of the disease.

Possible pathways of ASF introduction into China are

- transport-associated routes (TARs), including trucks, airplanes and ships carrying food contaminated with ASFV
- legal or illegal introduction of infected animals (pigs or wild boar)
- contaminated foodstuffs and other legally imported goods
- illegal imports of food products for private consumption or small-scale trade.

Thailand ???

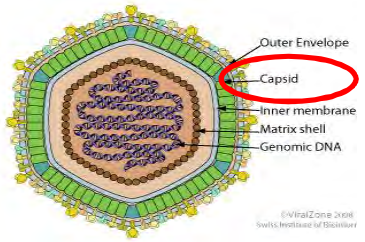
FAO


http://eaklamudclub.weebly.com

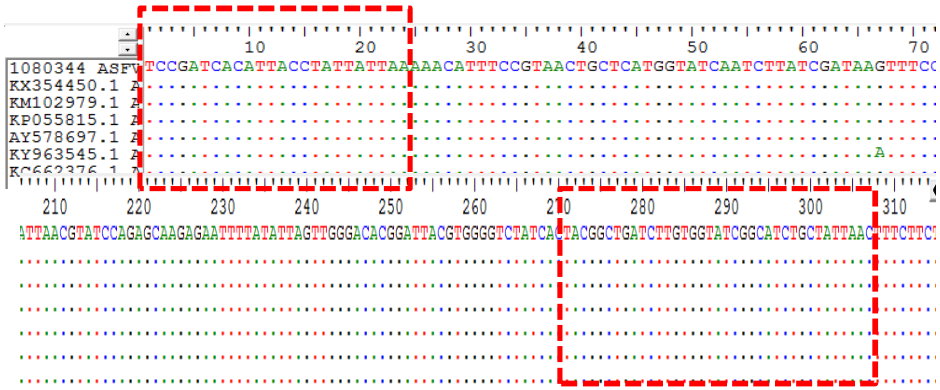

http://topicstock.pantip.com/food

https://www.youtube.com/watch?v=yu8pvuDtWe0

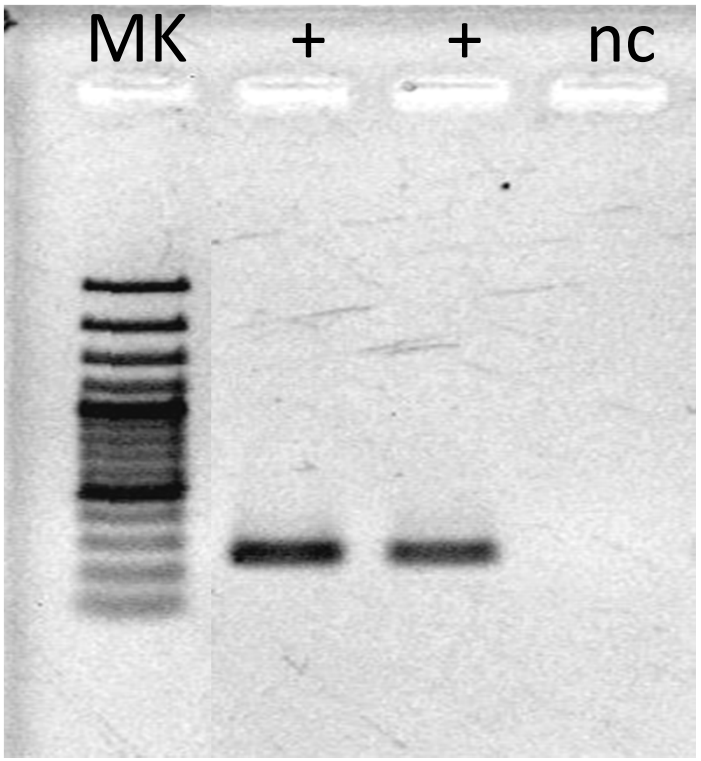
KU-VET Diagnostic unit



p72

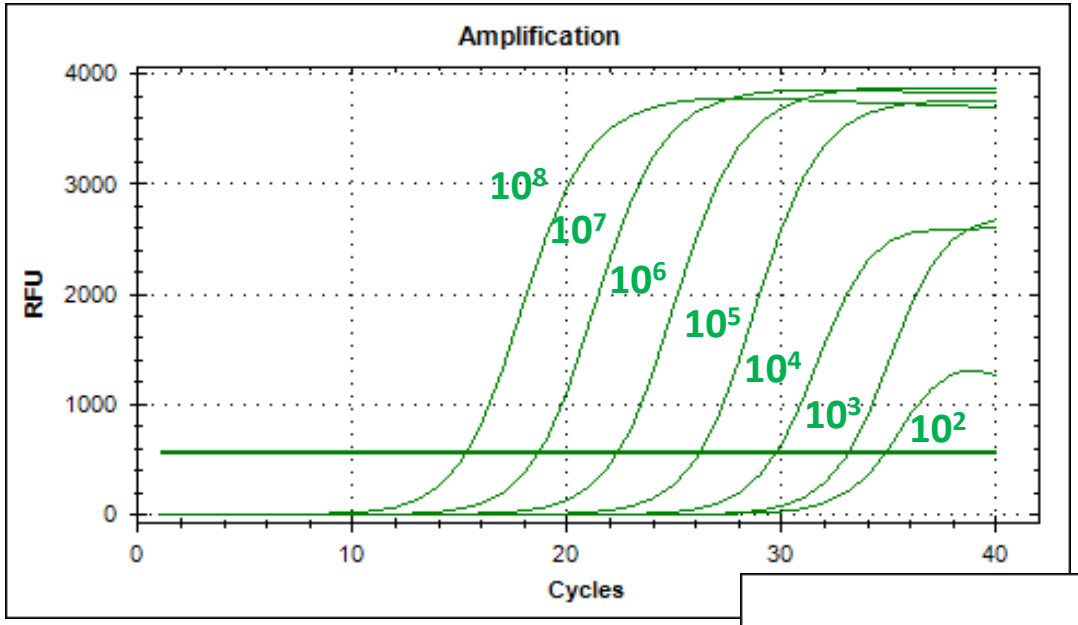


Conventional PCR



p72 specific primers showed positive results to synthesis p72 gene

KU-VET Diagnostic unit



Realtime PCR

p72 specific realtime PCR
LOD = 10^2 copy/ul