



Better Training for Safer Food *Initiative*

Introduction to African swine fever

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BTSEF

Prague, Czech Republic 25-27 October 2017

African Swine Fever Virus

“Highly” contagious viral disease of swine

Asfarviridae

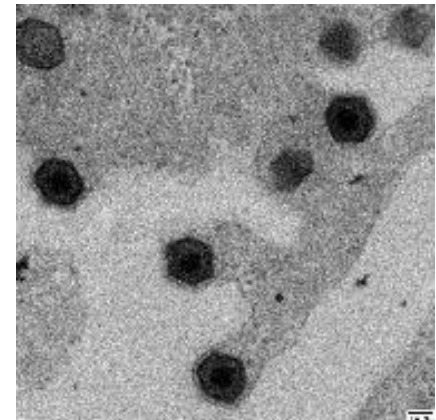
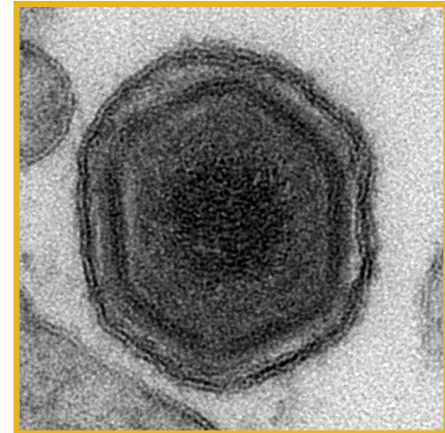
Enveloped DNA virus

Transmitted by arthropods

Isolates vary in virulence

High virulence: up to 100% mortality

Low virulence: seroconversion



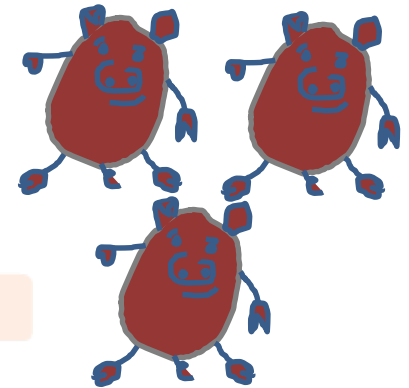
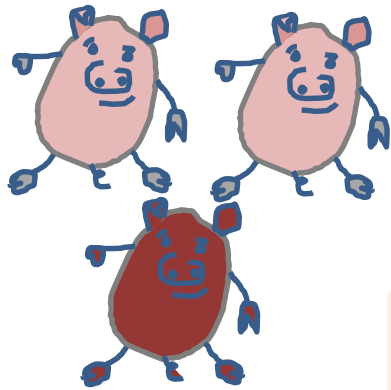
ASF is defined as:

“a highly contagious hemorrhagic disease of suids...”

Reality:

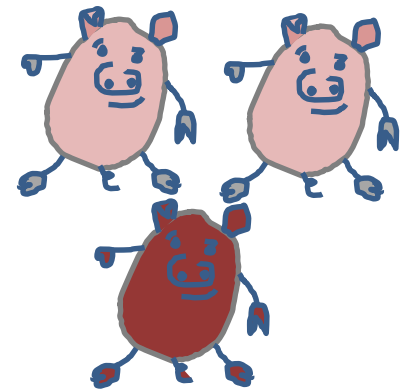
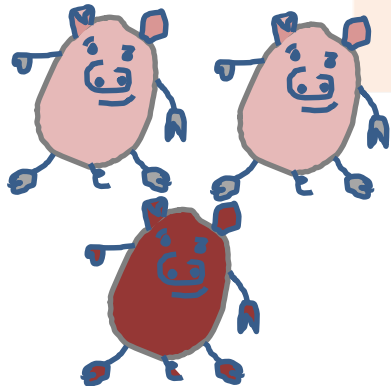
-> ASF is **not** a very highly contagious disease

Defining ASF as “*highly contagious*” leads to false expectations and underestimation of the problem...



Expectation

BTSEF



+3d

African Swine Fever Virus

- *Highly resistant;*
- *Killed by high temps and some disinfectants;*
- *Affects domestic and wild pigs.*



European susceptible species:

- Domestic pigs and European wild boar
- All age categories (no age dependency)
- Without gender predilection

(African wild swine – warthog - are unapparent infected and act as reservoir hosts for ASFV in Africa)

It is not a zoonosis

Environmental Persistence

Stable at pH 4-13...

Survives at least:

- *11 days in feces (room temp)*
- *1 month in soiled pig pens*
- *70 days in blood on wooden boards*
- *15 weeks in putrefied blood*
- *18 months in blood at 4°C*



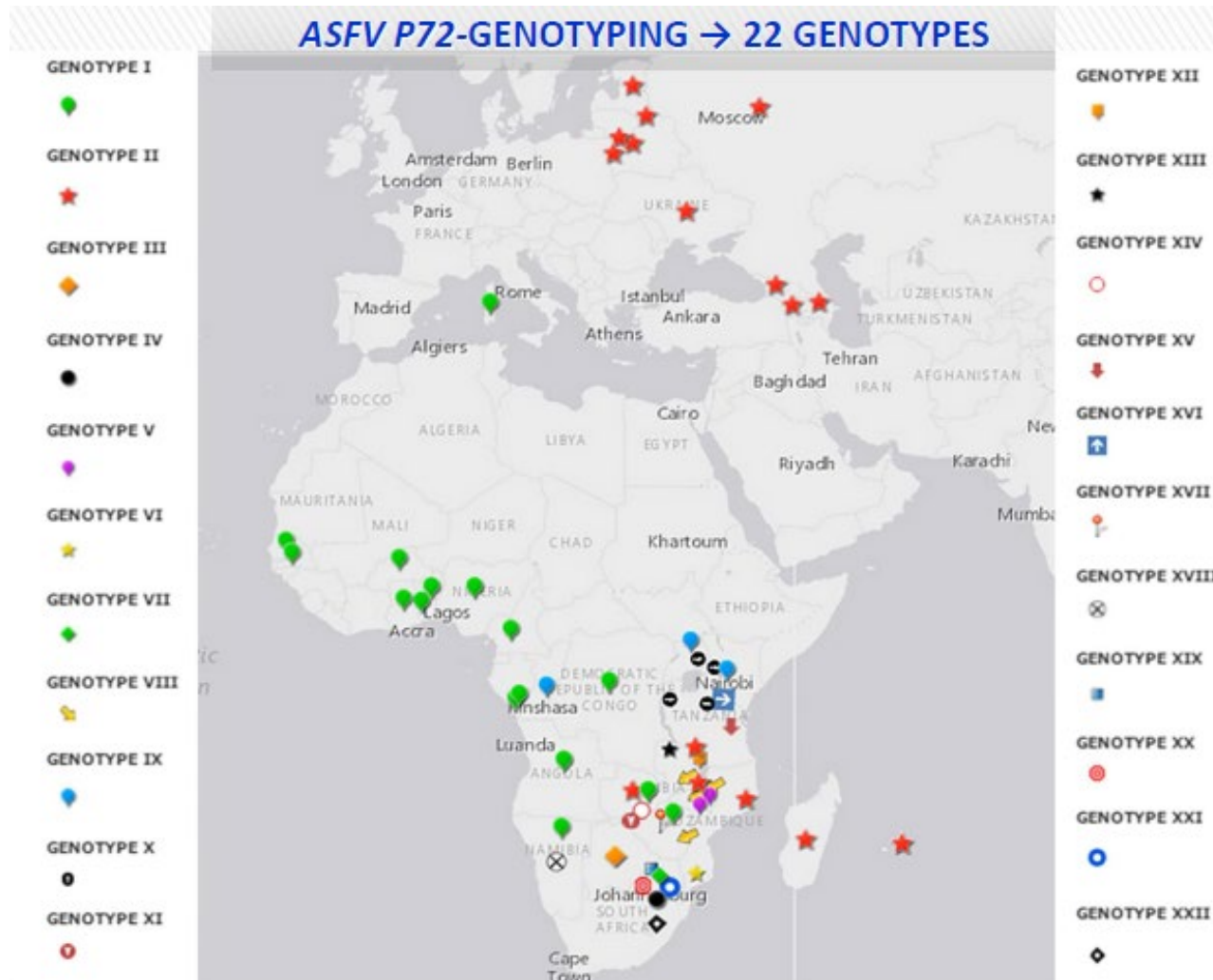
ASF VIRUS IS VERY STABLE

Carcasses: 3 – 5 weeks infectious

- 140 days in Iberian and Serrano hams
- 399 days in Parma ham
- 112 days in Iberian pork loins.
- 18 months in pig blood at 4°C
- 11 days in faeces at 20°C
- **Stable in carcasses (dead animals) which decompose**

However, no infectious ASFV has been found in cooked or canned hams when processed at 70°C.

ASF genotype circulation



African Swine Fever

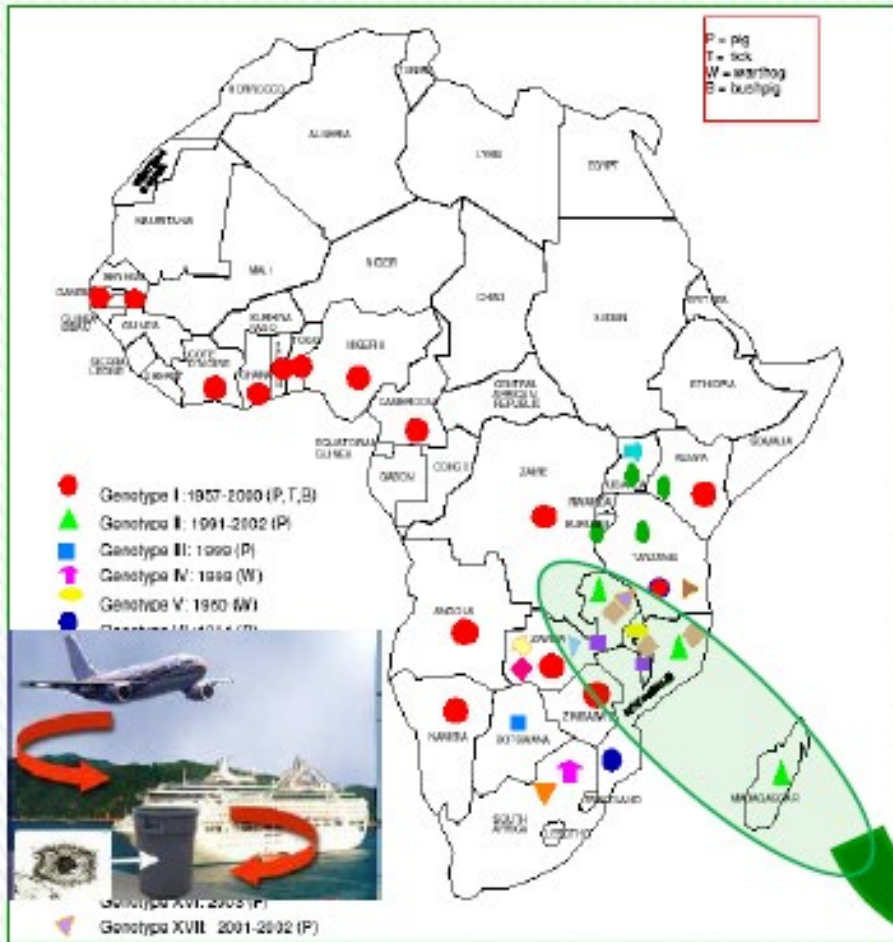
- First reported in 1921 in Kenya
- Acute to chronic disease
- characterized by high fever
- Cutaneous hyperemia
- Edema
- Hemorrhagic internal organs
- Abortions
- Can see bloody diarrhea



- Distribution – Sub-Saharan Africa
- Europe, Dominican Republic, Haiti, Cuba and Brazil
- Endemic in Africa and southern Europe



Tracing the origin



Georgia June 2007





From the GENETIC DATA

All Eastern European ASFV isolates characterized clustered within p72 genotype II

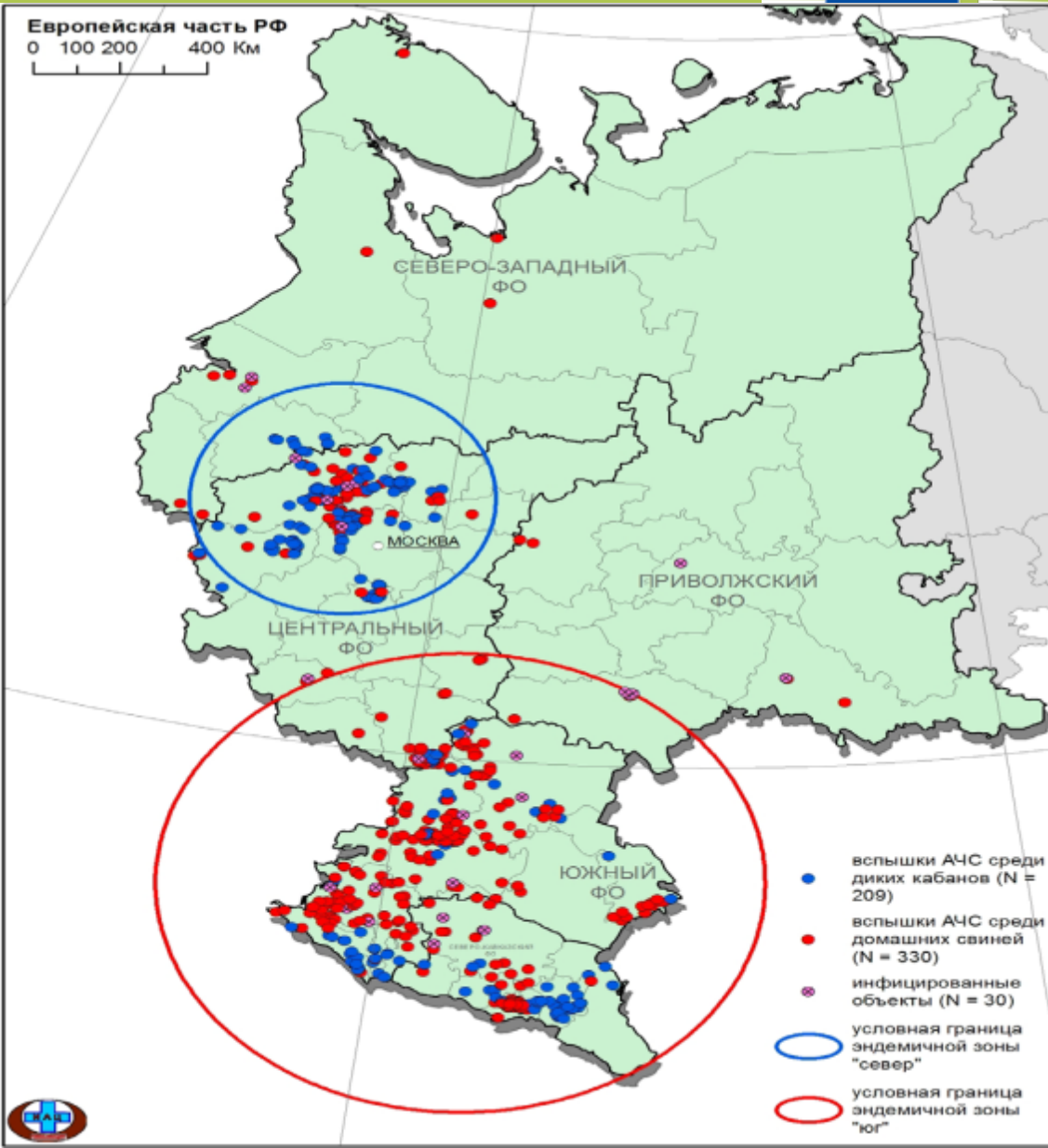
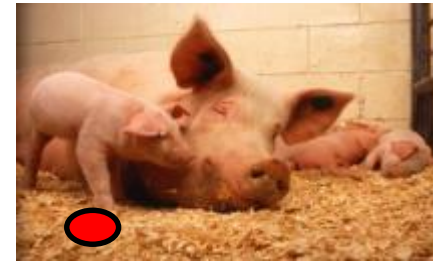


Single introduction → Since its introduction in 2007 in Georgia all ASFV isolates circulating in Eastern and Central Europe are classified within p72 genotype II.





ASF spread





2007-2013

ASF spread



- **6 affected countries in Eastern Europe** (Georgia, Azerbaijan, Armenia, Russian Federation, Ukraine, Belarus)
- **Ongoing spread of ASFV towards west affecting eastern European countries, such as Ukraine (2012) and Belarus (2013)**

EASTERN EUROPE

9 countries
affected since 2007



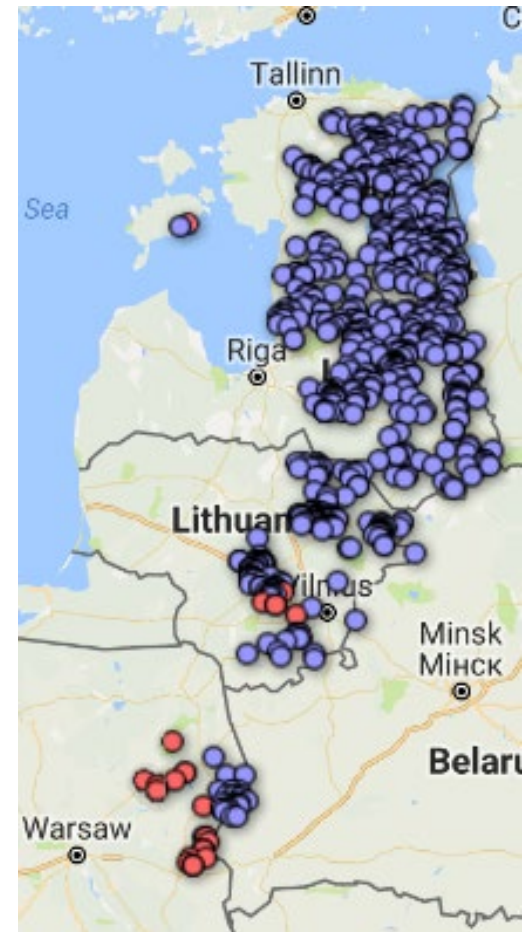
ITALY

ASF present since 1978



European
Commission

ASF in Baltic countries and Poland 2014 2015 2016



African swine fever: risks

- *backyard farming*
- *wild boar habitats*
- *free-ranging pigs*
- *movement of contaminated vehicles*
- *illegal movement of animals/animal products*
- *poor on-farm biosecurity*
- *particular species of ticks*
- *and etc.*

How does a pig get infected?

ONLY by direct contact with infected material or sick animals!

- Feeding on garbage containing infected pig meat and/or pork products;
- Contaminated fomites (premises, vehicles, clothes,...);
- iatrogenic (needles, syringes, instruments...).

Infected blood (blood cells) most risky material!!!!

Aerosol infection is unlikely...

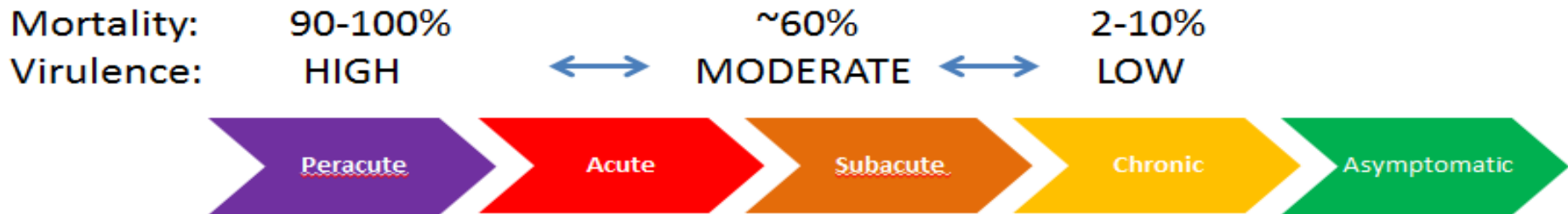
There is no report indicating the occurrence of *Ornithodoros* spp. in the affected Member States.

<http://www.efsa.europa.eu/efsajournal>

Clinical presentation

- *Incubation period: 3-19 days;*
- *Pigs of all ages and gender;*
- *ASF is not so infectious, so some animals within the herd may not get affected;*
- *The spread of the disease within the herd varies;*
- *Some indigenous resistant breeds observed in Africa;*
- *Wild boar = domestic pigs.*

Clinical presentation



Clinical signs highly variable

- Depending on virus virulence, breed, route of exposure, infectious dose;
- Sometimes only fever and death, or unspecific signs;
- Presentation in the field not identical to experimental cases;
- Sometimes only death is observed;
- Clinical course may vary from 20% to 100%.

ASF in Eastern Europe (acute form)

- Fever of 40-42°C;
- Lack of appetite;
- Animals are weak, lying down and huddling;
- Increased respiratory rate;
- Death within 3-15 days;
- Mortality rates 90-100% ;
- Acute forms are easily confused with other diseases (differential diagnosis);
- Animals usually in good body condition.



Acute form of ASF

One or several of the following:

- **Bluish-purple areas and hemorrhages (spot like or extended) on the ears, abdomen, and/or hind legs;**
- **Ocular and nasal discharges;**
- **Reddening of the skin of the chest, abdomen, perineum, tail, and legs;**
- **Constipation or diarrhea, which may progress to bloody;**
- **Vomiting;**
- **Abortion of pregnant sows at all stages of pregnancy;**
- **Bloody froth from the nose/mouth and a discharge from the eyes;**
- **The area around the tail may be soiled with bloody faeces.**

Note: The color changes and hemorrhages in the skin are easily missed in wild boar and dark-skinned/hairy pig breeds

Clinical signs and symptoms



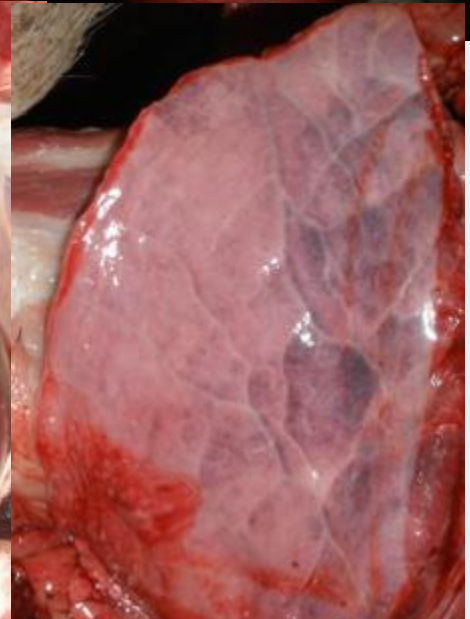
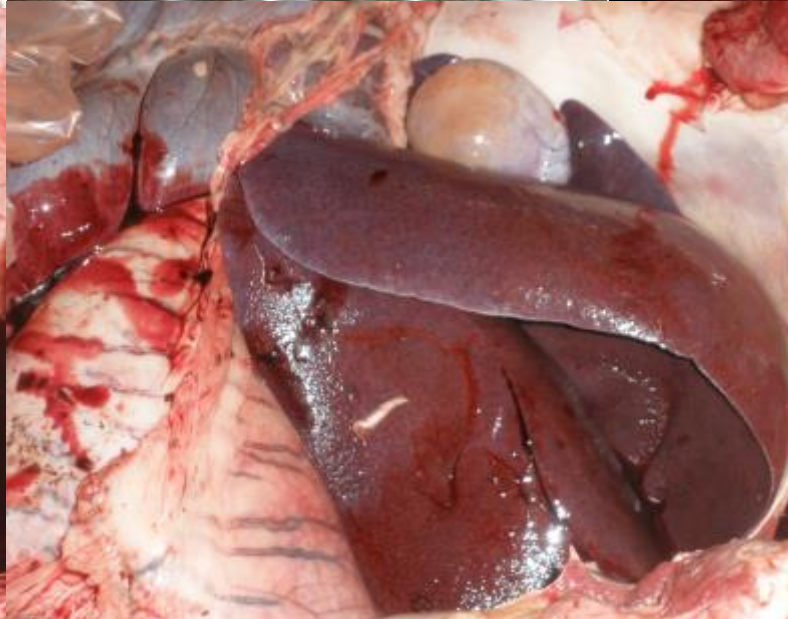
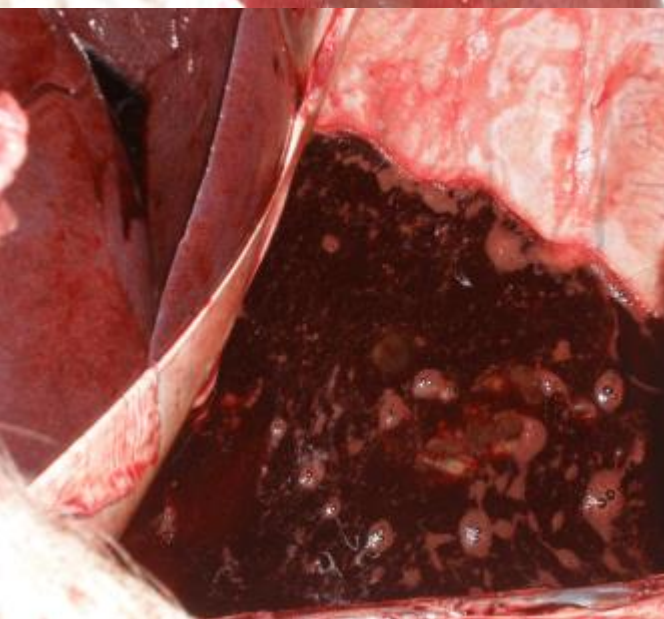
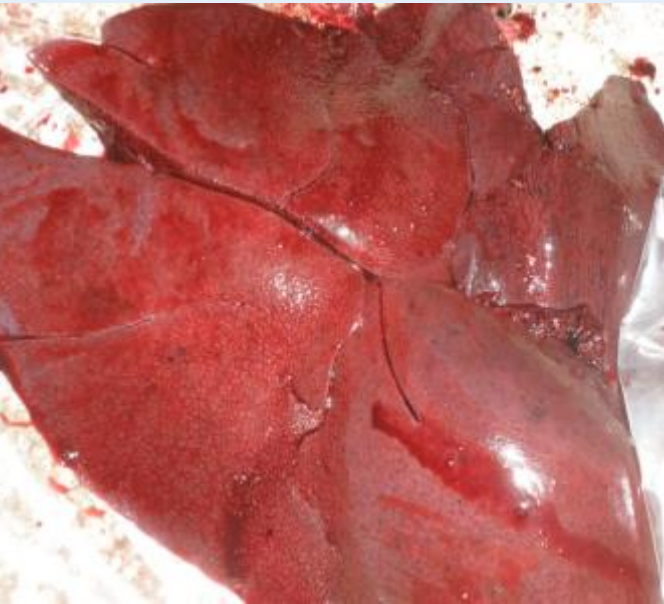
Clinical signs and symptoms



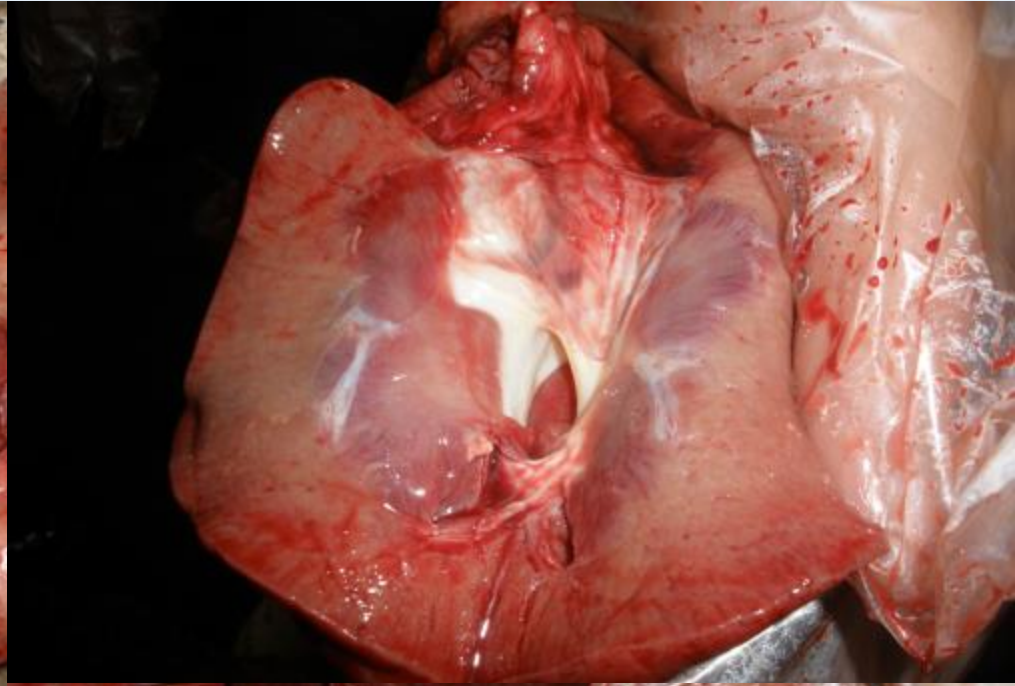
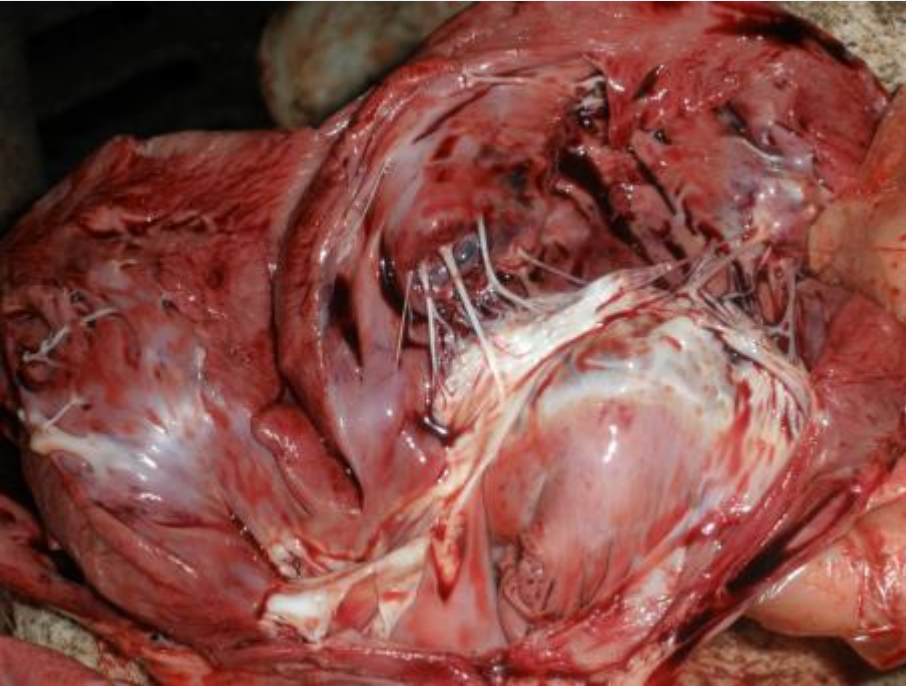
Clinical signs and symptoms



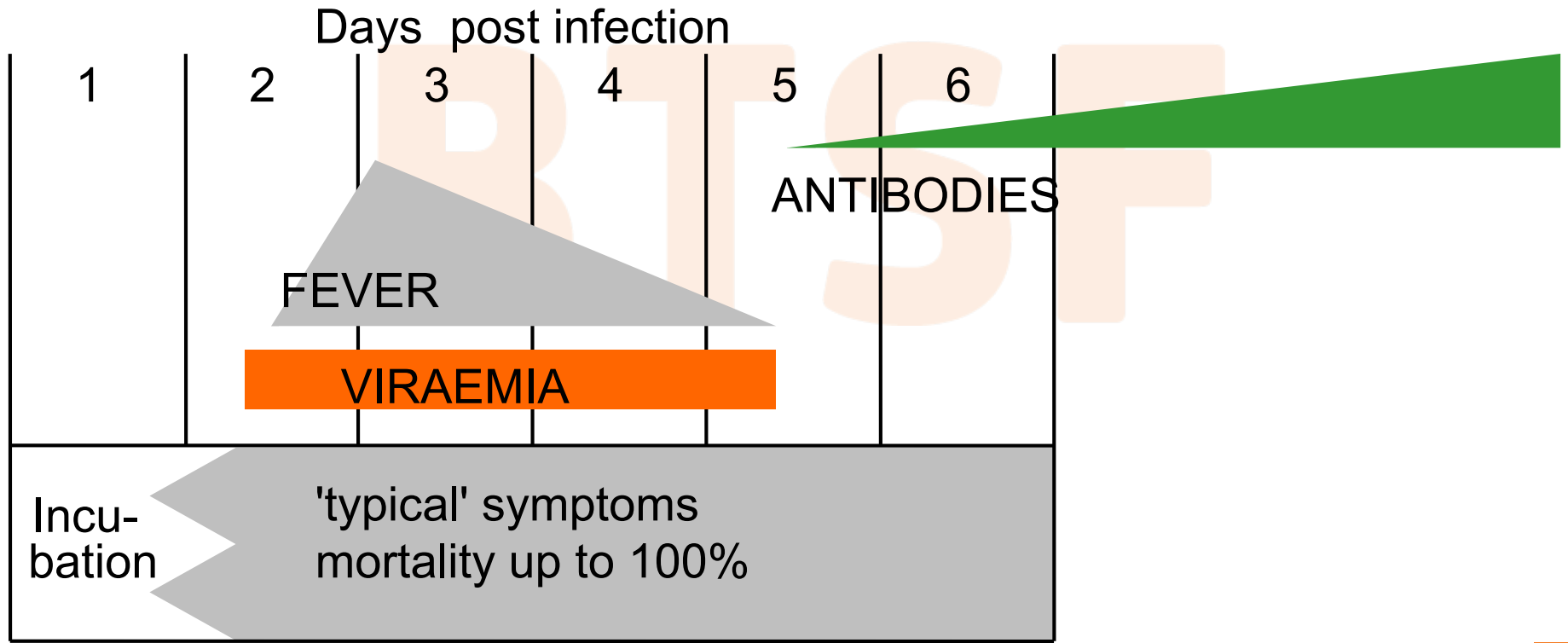
Post Mortem Lesions



Post Mortem Lesions



Acute course of ASF



ASF laboratory diagnosis

Virological and serological tests are largely available; ASF diagnosis is not a problem.

MAIN AIM: virus detection with PCR from blood and / or organs – early detection!

Antibodies are important for surveillance, when disease is longer time present in the infected country.

Test results can also be used for indicating the duration of infection

<i>PCR</i>	<i>Ab-Test</i>	<i>duration of infection (estimates)</i>
pos	neg	<12d (or the animal died/sampled before 12d)
pos	pos	>12d (or the animal died/sampled after 12d)
neg	pos	>24d (or the animals was sampled after 24d)

Samples needed by the lab for ASF diagnosis

- Blood in EDTA (0,5%) for PCR

Plus (diagnostic manual; CD 2003/422/EC)

- **Organ samples (spleen, lymph nodes, tonsil, kidney) PCR**
- *Bone marrow in case of old wild boar carcasses*
- Serum for Abs detection

**BLOOD only could give false negative tests....always test
ORGANS together with blood**

Differential diagnosis

Classical Swine Fever (CSF)

Erysipelas

Porcine Reproductive and Respiratory Syndrome (PRRS)

Salmonellosis

Pasteurellosis

Streptococcal infection

Leptospirosis

Circovirus infection (Porcine Dermatitis and Nephropathy Syndrome – PDNS)

Circovirus infection (Postweaning Multisystemic Wasting Syndrome – PMWS)

Coumarin poisoning



Thank you for your attention!
Any questions?



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