Roman Kucheryavenko, DVM, PhD, National Scientific Center “Institute of Experimental and Clinical Veterinary Medicine”, Kharkiv, Ukraine
The oldest in Ukraine Institute of Experimental and Clinical Veterinary medicine was founded in 1922 by special decision of the Government.

Since its foundation Institute worked on such problems as malleus, anthrax, brucellosis, plague, swine fever, foot-and-mouth disease, stachyobotryotoxicosis and others.
Nowadays NSC “IECVM” is a leading coordinating center concerning the problems of scientific support of veterinary medicine in Ukraine.
Our centre staff includes 22 Dr Sc., and 66 PhD.

6 scientific centres of expertise work within the framework of institution:

- for avian diseases,
- cattle diseases,
- TBC,
- parasitology,
- prionic infections
- feed-stuff quality and safety
Introduction

- African swine fever has a history of expanding from its basic focus in Africa to Southern Europe, the Caribbean, and Brazil. Now it is taking place the expanding its range into Eastern Europe and Northwest Asia, creating new reservoirs of the virus and increasing the possibility of introduction into The United States of America.
African swine fever (ASF) is caused by a large, double-stranded DNA virus, African swine fever virus (ASFV), which replicates predominantly in the cytoplasm and is the only member of the Asfarviridae family, genus Asfivirus (Dixon et al. 2005).
The natural cycle of ASF appears to be between soft ticks (family Argasidae) and any of three species of wild suids: warthog (Phacochoerus africanus), bushpig (Potamochoerus larvatus), and red river hog (Potamochoerus porcus).

Both domestic pigs and the European wild pig ("sanglier," also Sus scrofa) suffer severe disease from ASF infection.

The possibility of sangliers maintaining ASF in the wild could create a permanent reservoir of the virus in Europe. Similarly, feral swine in the US might be capable of maintaining a viral reservoir.
ASF was first described in Kenya in the 1920s as an acute haemorrhagic fever which cause mortality approaching 100 per cent in domestic pigs. It was noted that disease outbreaks occurred when domestic pigs came into close contact with wildlife species, particularly warthogs (Phacochoerus aethiopicus and Phacochoerus africanus).

Outbreaks of ASF were reported subsequently in a number of other European countries, including Malta (1978), Italy (1967, 1980), France (1964, 1967, +1977), Belgium (1985) and The Netherlands in 1986.

In 2007, further transcontinental spread of ASF occurred with the introduction of ASF to Georgia in the Caucasus region. Delays in recognizing ASF resulted in its widespread distribution to neighbouring countries, including Armenia, Azerbaijan and several territories in Russia.
In 1958 viral transmission and wildspreading within all continents was started from Angola out the border of world natural focus of ASF.
Table 3.

The virus of A.C.O. isolated in the MII on 1.05.1966.

<table>
<thead>
<tr>
<th>No</th>
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<th>Biological activity</th>
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<tbody>
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<td>1</td>
<td>С.Парус</td>
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<tr>
<td>2</td>
<td>В.Андер</td>
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<td>3</td>
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<td>4</td>
<td>Ф.К.</td>
<td>1960</td>
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</tr>
<tr>
<td>5</td>
<td>Д.К.</td>
<td>1961-1963</td>
<td>не исследован</td>
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<td>6</td>
<td>Д.Махома</td>
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<td>7</td>
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<td>11</td>
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<tr>
<td>12</td>
<td>К.Андерт</td>
<td>1980-1982</td>
<td>утеряна</td>
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Geographic Distribution

- Endemic
  - Southern Africa
  - Island of Sardinia (Italy)
- Recent outbreaks
  - The Caucasus
  - Georgia
  - Armenia
  - Russia
  - Ukraine

..........???
Morbidity/Mortality

- Morbidity approaches up to 100%
- Previously unexposed herds
- Mortality varies with virulence of isolate
  - Ranges from 0 to 100%
- May be asymptomatic in wild pigs
- No treatment or vaccine
The risk of introduction of ASF

Использование свиней и свиных продуктов

Zoo parks / safari / farm residence

Farms

Hobby

Hunting

Butchery

Genetic industry

Laboratories

Trade, exhibitions

Meat factories

Feed industry / Pharmacy /
Animal Transmission

- **Direct contact**
  - Usually oronasal

- **Indirect**
  - Uncooked garbage
  - Insects
  - Bite of infected ticks
  - Mechanically by biting flies

- Found in all tissues and body fluids
Incubation period: <5 to 19 days

Clinical signs
- High fever
- Moderate anorexia
- Erythema, cyanosis
- Recumbency
- Bloody diarrhea
- Abortion
- Death
Clinical Signs: Chronic Disease

- Multi-focal erythema
  - Ears, abdomen
  - Raised or necrotic areas
- Intermittent, low fever
- Coughing
- Painless joint swelling
- Emaciation, stunting
- Death
Post Mortem Lesions: Most Common

- Hemorrhagic
  - Spleen
    - Enlarged
    - Friable
    - Dark red, black
  - Lymph nodes
  - Kidneys
  - Heart
Post Mortem Lesions: Chronic Infection

- Focal skin necrosis
- Fibrinous pericarditis
- Generalized lymphadenopathy
- Swollen joints
- Consolidated lobules in lung
Suspect ASF in pigs with:
- Fever
- Characteristic post mortem signs in spleen, lymph nodes

Laboratory tests
- Virus isolation
- Viral antibody detection
- PCR
Differential Diagnosis

- Classical swine fever (hog cholera)
- Acute PRRS
- Porcine dermatitis and nephropathy syndrome
- Erysipelas
- Salmonellosis
- Eperythrozoonosis
- Actinobacillosis
- Glasser’s disease
- Aujeszky’s disease (pseudorabies)
- Thrombocytopenic purpura
- Warfarin poisoning
- Heavy metal toxicity
Vaccination

- No effective vaccine
- We all need to do our part
  - Keep our pigs healthy
  - Free of foreign animal diseases
Suspicion of ASF
  - Quarantine
    - Entire herd
    - Strict enforcement
    - Authorities notified
    - Diagnosis confirmed

Disposal of carcasses
  - Burial
  - Burning
Nascent Status and Trends of Metamorphoses in Eurasian Nosorean of ASF
Распространение АЧС по территории Российской Федерации (N = 404)
/данные на 17.12.2012/

<table>
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<tr>
<th></th>
<th>2007 - 08</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
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<tr>
<td>Всего (кумулята):</td>
<td>64</td>
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<td>283</td>
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<tr>
<td>За год:</td>
<td>64</td>
<td>73</td>
<td>84</td>
<td>62</td>
<td>121</td>
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<tr>
<td>Кабаны:</td>
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<td>26</td>
<td>21</td>
<td>14</td>
<td>45</td>
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</tbody>
</table>

Условные обозначения:
- вспышки АЧС среди диких кабанов (N = 128)
- вспышки АЧС среди домашних свиней (N = 252)
- инфицированные объекты (N = 24)
- 100-км зона риска
Dynamics of enzootic focuses formation of ASF in Rostov region (Russia) (September 2009 - August 2010)

Міжепізоотичний період ~ 6 міс

Дезакаризація та дезінсекція не проводилися
We haven’t guaranties that new ticks species will not introduce on Ukraine and Ornithodoros area in Ukraine amplified.
Анализ пространственно-временного распределения* вспышек АЧС среди диких и домашних свиней

*Для каждого вида животных эллипс охватывает все вспышки, расположенные на расстоянии в пределах 1 стандартного отклонения от условного центра группы. При этом длинная ось эллипса указывает тенденцию распространения вспышек во времени.

пространственно-временная тенденция распространения АЧС среди диких кабанов
пространственно-временная тенденция распространения АЧС среди домашних свиней
АЧС серед диких кабанів
АЧС серед свійських свиней
In 2010/2011 ASF’ epizooty recourse to “jump-liking” northward widespread because ASF agent fused in food chains and begin wide spreading among wild boars on territories which was contaminated by back-yard piggeries wastes.
Russian scientists (from Vladimir Research Institute, 2011) predicate the total wide spreading of ASF on Russia Federation in 2011-2013.
European Union prognosis (by Prof. José M. Sánchez-Vizcaíno, 2011) is more pessimistic ...
In the 2nd August 2012, Ukraine Veterinary committee have reported to the OIE an outbreak of African Swine Fever in backyard pigs in Zaporozhye region. This is the first time ASF has been reported in the Ukraine. According to the disease report, of the five pigs on the premises, three had non-specific clinical signs including fever, and died quickly. Samples were tested positive by PCR and the other two pigs were also destroyed. Disease control measures are in place.
This latest outbreak in the Ukraine is a concern for several reasons. It has occurred 170 km from the Russian border and therefore suggests a large jump, rather than gradual spread, and therefore may be associated with movement of pigs, products or vehicles.

African Swine fever continues to cause a problem in Eastern Europe. The disease is continually causing outbreaks in wild boar and back yard pigs in the Caucasus region and appears to have become entrenched in the pig and wild boar population of the Tver region (Empres, 2012). This suggests that wild boar in the area may be acting as reservoirs for disease, although the large “jumps” observed are frequently associated with the movement of live pigs, pig products or infected transport vehicles. This puts countries in Eastern Europe at risk. Particularly along the areas of the Eurasion forest where undetected spread may occur in wild boar.
The veterinary service of Ukraine was able to respond fast and adequately to the ASF threat posed by the endemic situation in the Russian Federation.

A vertical chain of command from the centre down to the village ensures a fast implementation of the control measures. A closed-meshed veterinary service enables a fast monitoring and surveillance system based on clinical examination… (Mission of EU 8/9 Sept 2012)
Additional Resources

- World Organization for Animal Health (OIE)
  - www.oie.int
- U.S. Department of Agriculture (USDA)
  - www.aphis.usda.gov
- Center for Food Security and Public Health
  - www.cfsph.iastate.edu
- USAHA Foreign Animal Diseases
  ("The Gray Book")
  - Center for Food Security and Public Health, Iowa State University, 2011
  - www.cfsph.iastate.edu/DiseaseInfo/ppt/AfricanSwineFever.pp
"I love Africa"

Thank you for attention!