African Swine fever in Poland

Grzegorz Woźniakowski, Zygmunt Pejsak, Maciej Frant, Krzysztof Niemczuk
NATIONAL VETERINARY RESEARCH INSTITUTE IN PULAWY, POLAND

Chisinau
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National Reference ASF laboratory
Diagnostic capabilities

- 800-1000 samples/day (3 – shift labour day)
ASF diagnostic methods applied by NVRI

- Serological (ELISA, IB and IPT confirmatory assays,
- Molecular assays (real-time PCR),
- ELISA, real-time PCR and IPT techniques are approved and accredited by Polish Accreditation Centre
Poor conditions of material sent for ASF diagnostic study

(a) spilled and mixed blood samples, (b) a bone without any trace of bone marrow

Laborious and time consuming !!
ASF in wild boars
# Passive surveillance - the most informative

<table>
<thead>
<tr>
<th>Year</th>
<th>Found Dead</th>
<th>Car accident</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tested</td>
<td>+</td>
</tr>
<tr>
<td>2014</td>
<td>115</td>
<td>46</td>
</tr>
<tr>
<td>2015</td>
<td>130</td>
<td>67</td>
</tr>
<tr>
<td>2016</td>
<td>149</td>
<td>63</td>
</tr>
<tr>
<td>2017 (until 31.08)</td>
<td>471</td>
<td>282</td>
</tr>
</tbody>
</table>
## Active surveillance

<table>
<thead>
<tr>
<th>Year</th>
<th>Part II + III (ASF - affected)</th>
<th>Tested</th>
<th>+</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td></td>
<td>3387</td>
<td>14</td>
<td>0.41%</td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td>4221</td>
<td>24</td>
<td>0.56%</td>
</tr>
<tr>
<td>2017 (until 31.08)</td>
<td></td>
<td>3528</td>
<td>66</td>
<td>1.87%</td>
</tr>
</tbody>
</table>
CONCLUSION*

1. The presence of ASF has been confirmed throughout antibody and/or ASFV genome detection in all wild boar received from the cases occurred in Poland from December 2016 (case 165) up to March 2017 (case 250).

1. The presence of ASF has been confirmed throughout antibody and/or ASFV genome detection in all wild boar received from the cases 107 to 162 which were occurred in Poland from August 2016 (case 107) up to December 2016 (case 162).

In Valdeolmos, Madrid (Spain), 24th May 2017

Dr. Carmina Gallardo Frontaura
Researcher, Laboratory Coordinator
EU Reference Laboratory for ASF
INIA-CISA

Dr. Marisa Arias Neira
Technical Director
EU Reference Laboratory for ASF
INIA-CISA

Approval: Dr. Marisa Arias Neira
Technical Director
INIA-CISA
Latest laboratory scientific activity
Examination of synthetic molecules inhibiting ASFV replication *in vitro*

<table>
<thead>
<tr>
<th></th>
<th>5 dpi in duplicates</th>
<th>50uM</th>
<th>10uM</th>
<th>2uM</th>
<th>0,4uM</th>
</tr>
</thead>
<tbody>
<tr>
<td>VV03-0001</td>
<td>- - + + + + + + +</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>VV03-0002</td>
<td>- - - - + + + + +</td>
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<td></td>
<td></td>
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<tr>
<td>VV03-0003</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VV03-0004</td>
<td>- - - - + + (weak) +/- (very weak) + +</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VV03-0005</td>
<td>- - + (weak) + + + + +</td>
<td></td>
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</tr>
<tr>
<td>VV03-0006</td>
<td>- - + + + + + + +</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VV03-0007</td>
<td>- - - - + (weak) + (weak) +/- (weak) + +</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VV03-0008</td>
<td>- - - - +/- (very weak) +/- (very weak) + +</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VV03-0009</td>
<td>- - - - - - + + +</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

+ virus present
- virus absent
Examination of ASFV infectivity/survivability after incubation of infected organs from pigs and wild boars in soil, litter and water (different conditions)
Construction of recombinant ASFV strain lacking genes involved in evasion host-immune response using CRISPR/Cas9

Observation of virus replication in infected pig macrophages using Holographic Microscope (no virus staining required)
Scientific papers published by the research team of the National Reference ASF Laboratory at the NVRI

African Swine Fever Epidemic, Poland, 2014–2015

Krzysztof Smietanka, Grzegorz Woźniakowski, Edyta Kozak, Krzysztof Niemczuk, Magdalena Frączyk, Łukasz Bocian, Andrzej Kowalczyk, Zygmunt Pejsak

In Poland, African swine fever (ASF) emerged in February 2014; by August 2015, the virus had been detected in >130 wild boar and in pigs in 3 backyard holdings. We evaluated ASF spread in Poland during these 18 months. Phylogeography very near (<1 km) the border with Belarus (6). As of August 31, 2015, a total of 76 cases in wild boar and 3 out of 360 among domestic pigs had been found in 3 counties (6 administrative regions of Poland).

EMERGING INFECTIOUS DISEASES

Evolution of African swine fever virus genes related to evasion of host immune response

Magdalena Frączyk1, Grzegorz Woźniakowski1, Andrzej Kowalczyk, Łukasz Bocian2, Edyta Kozak1, Krzysztof Niemczuk1, Zygmunt Pejsak1

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2 National Veterinary Research Institute (NVRI), Pulawy, Poland

DE GRUYTER OPEN

Selected aspects related to epidemiology, pathogenesis, immunity, and control of African swine fever

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DOI 10.1007/s00705-015-2650-5


Grzegorz Woźniakowski1, Edyta Kozak1, Andrzej Kowalczyk1, Magdalena Łyjak1, Małgorzata Pomorska-Miłł1, Krzysztof Niemczuk1, Zygmunt Pejsak1

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Polymerase cross-linking spiral reaction (PCLSR) for detection of African swine fever virus (ASFV) in pigs and wild boars

Grzegorz Woźniakowski1, Magdalena Frączyk1, Andrzej Kowalczyk1, Małgorzata Pomorska-Miłł1, Krzysztof Niemczuk1, Zygmunt Pejsak1
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