Challenges for African Swine Fever Vaccine Development

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An African Story...But
From Time-to-Time “Out of Africa”
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Netherlands, 1986
Belgium, 1985
France, 1964/68, 1974
Malta, 1978-79
Italy, 1967, 1983

Portugal, Spain
1957, 1960-95

Georgia, 2007

Georgia, 2007

Sardinia, Italy

Brazil, 1978-81

Cuba, 1971, 1980
Haiti, 1978-84
Dom. Rep., 1978-80

Western Russia

Caucasus Region

China
20018

Africa
“African Swine Fever Sweeps Across Russia” - And Pushes West

African swine fever confirmed in Belgium

This new outbreak may represent a new change in the epidemiologic situation of ASF worldwide, suggesting that the disease may have reached pandemic proportions.

Sep 13, 2018

African Swine Fever spreads to new region in Bulgaria

Virus found in wild boar 50km south of Romanian border

02 Nov 2018

Recent African Swine Fever outbreaks domestic pigs and wild boar in 2017

[Insets: wild boar cases in Czech Republic and backyard outbreaks in Romania]
“African Swine Fever Sweeps Across Russia”
And Now China …..

China’s swine herd has halved to ~ 200 million head

The pigs now missing in China are greater than the rest of the world’s total production
ASF “Out of Africa” Forever

Endemic disease in over ½ of the world’s pigs
African Swine Fever Virus

- Sole member -Asfarviridae
- Icosahedral virus ~ 200 nm
- Linear dsDNA genome
  -185-193 kbp (157-168 genes)
- Replicates in cell cytoplasm

![Diagram of African Swine Fever Virus Genome](image)

- ASFV Genome
  - Left Variable Region
  - Central Variable Region
  - Right Variable Region

- MGF360
- MGF505/330
- MGF110
- MGF100
- MGF300
- VP22
- ITR
- Highly Variable Region
- Insertion/deletion
African Swine Fever Virus

Only DNA Arbovirus

Infects and persists in soft ticks and members of *Suidae* family
African Swine Fever

- Highly lethal (100%) to subclinical
- Edema, ascites and hemorrhage
- All domestic pigs susceptible
- Virulence-replication and spread within mononuclear-phagocytic system