

***The molecular genetic studies
of the porcine reproductive and
respiratory syndrome virus (PRRSV) and
its association with porcine parvovirus
infection (PPV), porcine circovirus (PCV)
in Ukraine***



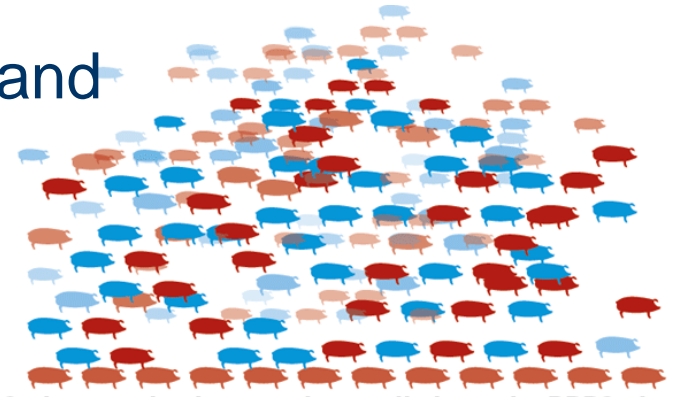
PhD Nataliia Gavrasieva
13/11/2015

scientific project

Strains Research in Ukraine

Strains research In Ukraine mainly includes:

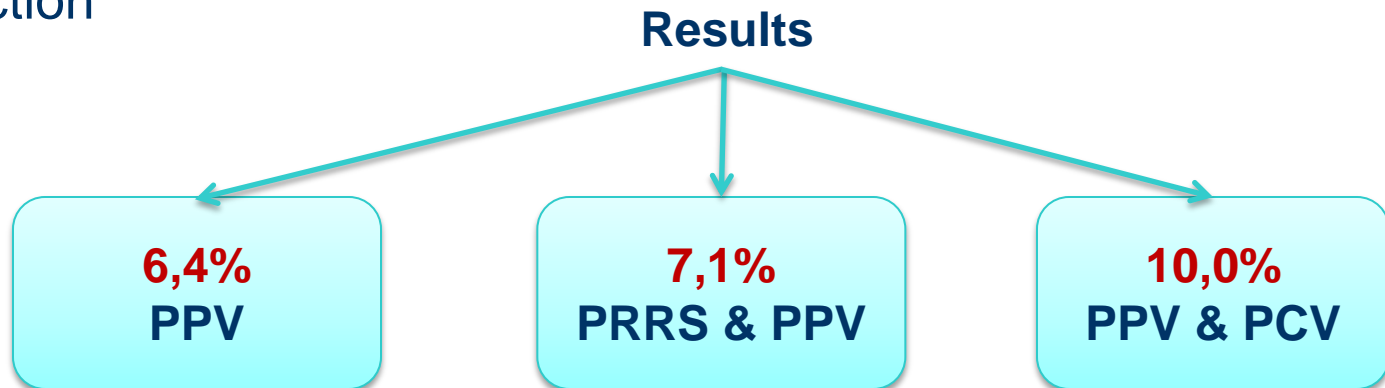
- **PRRSV** - Porcine Reproductive and Respiratory Syndrome Virus
- **PCV** - Porcine Circovirus
- **PPV** - Porcine Parvovirus



Virus study problem lays in fact that veterinary doctors in the pig farms do not always apply to veterinary laboratories in order to make diagnosis.

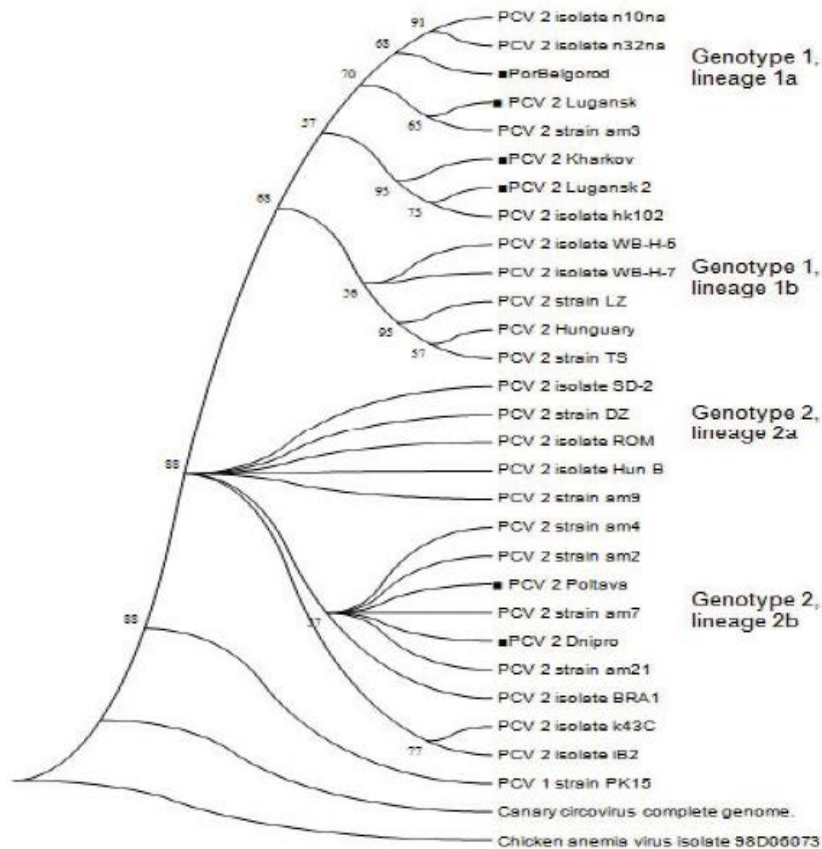
Research Results

79 samples of pathological material from pigs were studied by National Scientific Center "Institute of Experimental and Clinical Veterinary Medicine" in 2011-2013 years using polymerase chain reaction



Mono infections are mostly presented by the porcine reproductive and respiratory syndrome virus in **54,4%** of samples and parvovirus infection other diseases in **23%** of samples

Dendrogram of the phylogenetic relations among the strains and isolates of PCV-2 (Neighbor Joining, — Ukrainian isolates) - 2011 year



Positive samples of pathological material from pigs from different regions of Ukraine was sequenced in 2011 by National Scientific Center "Institute of Experimental and Clinical Veterinary Medicine". The presence of three groups of Ukrainian isolates of Swine Circovirus type II was discovered (according to report of Anton Gerilovych)

International Collaboration and Experience Exchange

- In 2008 genetic material of the virus PRRS from the Kiev region was successfully sequenced in the National Veterinary Research Institute (Pulawy, Poland) with a high support from Professor **Tomasz Stadejeck**
- Researches proof that **isolates** from Ukraine **belong to subtype 2 of European genotype**
- The nucleotide composition are similar to isolates **in the Russian Federation and Belarus**
- According to various authors **American and European types of virus** are also observed on the territory of Ukraine

Sequences of the Ukrainian isolates of PRRSV in 2008 year

- ATGGCCGGTAGATACCAGCGCCAGAAGAAAGGCAACAAC
ACAGCTCAAATGGGGAAAGACCAGCCAGTCAATCAACTGT
GCCAATTGCTGGGCAAATGATGAAATCCCAGCGCCAGCA
GCCTAGGGGAGGACAGGCCAGTAAAAGAAAAAGACCTGA
GAAGCCTCATTTCCTTGGCTGCCGAAGATGACGTCCGG
CACCACCTCACCTCGACTGAGCGCTCCCTTTGTTTGCAAT
CGATTCAGACAGCCTTTAATCAGGGCGCAGGAAGTCAAC
GCTTTCACCCAGCGGGAAAGTCAGTTTTTCAGGTTGAGTTT
ATGTTGCCGGTCGCTCATAACAGTGCGCCTAATTCGCGTGA
CTTCCGCACCTACCAATTAC



Diagnostic kits registered in Ukraine

1. **Porcine Circovirus 2 (PCV2) Antibody Test Kit** (Biotech Co., Ltd)
2. **Porcine Reproductive and Respiratory Syndrome Virus Antibody Test Kit** (IDEXX PRRS X3)
3. **Porcine Respiratory and Reproductive Syndrome Virus Antibody Test Kit** (Biotech Co., Ltd)
4. **Porcine Circovirus 2 (PCV2) Antibody Test Kit** (Biotech Co., Ltd)
5. **Sui DNA-Test-PCV2** (Institute of Experimental and Clinical Veterinary Medicine);
6. **PRRS- PCR** (The State Scientific Control Institute of Biotechnology and Strains of Microorganisms (SSCIBSM) Kyiv, Ukraine)

Vaccines Against Pathogens Registered In Ukraine

1. Inactivated vaccine PCV (type 1 and 2):

Suvaxyn PCV 2 (Zoetis), Porcilis ® PCV M. Hyo (Intervet International), CIRCOVAC (Merial), Ingelvac CIRCOFLEX (Boehringer Ingelheim), Porcilis ® PCV (Intervet International), PRO-VAK® CIRKOMASTER (Komi Farm International CO., Ltd.).

2. Living and inactivated vaccines PRRS (American and European type):

Biosuis PRRS (Bioveta), Progressis (Merial); AMERVAC-PRRS (HIPRA), SUIPRAVAC-PRRS (HIPRA), Porcilis® PRRS (Intervet International) Ingelvac PRRSFLEX (Boehringer Ingelheim), ReproCyc®PRRS (Boehringer Ingelheim).

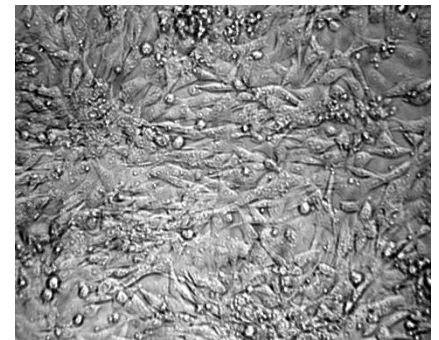
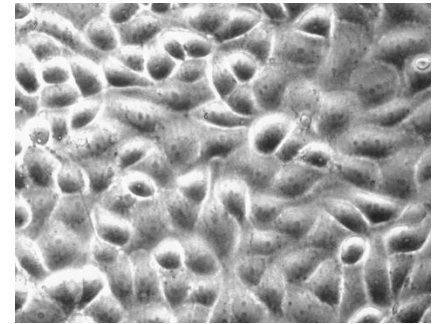
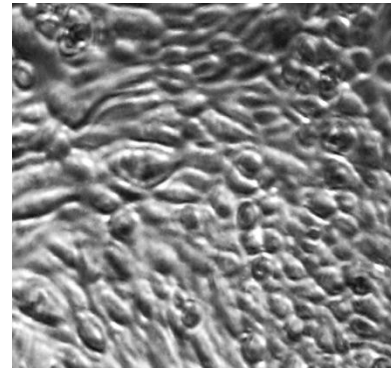
3. Inactivated vaccine PPV :

Porcilis ® Parvo (International), Suvaxyn Parvo / E (Zoetis),(Zoetis), Parvoruvax (Merial), Biosuis Parvo L(6) (Bioveta), Eryseng Parvo (HIPRA), Feroshur Plus B (Zoetis), Porcilis ® Ery+Parvo (Intervet International) Parvoerysin (Bioveta), Parvosin-OI (Bioveta), PARVOSUIN MR (HIPRA).

Bank Cell Cultures in SSCIBSM (Kyiv, Ukraine)

Cell cultures certified in our Institute:

- Pk-15, Marc-145, Vero,
- SPEV, FLK, BHK-21,
- RK-13, BF2, CHOK1, TR,
KST, A72, SH, McCoyB,
MDCK



Study Challenge

To prevent PRRS, PPV, PCV, it is important to have **detailed information on strains circulating** in Ukraine, because proposed vaccine may not be fully immune to protect animals.



Prospects of Ukraine

- Detailed study of the spread of the virus PRRS, PPV, PCV in Ukraine
- Conduct molecular research of field isolates that circulate on the territory of Ukraine by direct sequencing and phylogenetical analysis of the virus PRRS, PPV, PCV
- Identify the primary structure of the complete genome of such virus isolates as PRRS, PPV, PCV
- Try to get recombinant virus by transfection of inoculated cell cultures in vitro.

Thank you for attention!

The State Science-Control Institute of Biotechnology and Strains of
Microorganisms (SSCIBSM)

30, Donetskaya St., Kyiv, 03151, Ukraine

Tel/fax: + 038(044) 245-76-08

gavrasievahata@gmail.com - PhD Gavrasieva Nataliia

blotskaya@ua.fm - PhD Blotska Oksana

