

Porcine circovirus type 2 (PCV-2) virulence attenuation by mutations in the capsid motif specific of genogroup

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Virulence of PCV-2

PCV-2: etiologic agent of Post-weaning Multisystemic Wasting Syndrome (PMWS)

PMWS diagnosis:

- Clinical signs: hyperthermia, weight loss
- Histopathological findings: lymphocyte depletion
- Viral detection in affected organs

Others parameters to define PCV-2 virulence:

- Seroconversion
- Genomic loads in sera
- Genomic and infectious viral loads in organs

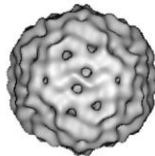
Capsid protein

Capsid protein:

- ORF2 of PCV-2
- 233 amino acids, 30 KDa

Virus capsid:

- Icosahedric form
- 60 homodimers gathered in 12 pentamers



Tri-dimensional images of PCV-2 assembling by cryo-microscopy
From Crowther et al, 2003

Capsid protein identity:

- most variable protein of PCV-2
- 90 to 100% identity in amino acid

Classification

- 2 major clusters of PCV-2:
2 genogroups with 2 motifs strongly conserved :
 - PCV-2a: TNKISI
 - PCV-2b: SNPRSV

Genogroup motif amino acid 86 to 91



- 2005: PMWS outbreak in North America
PCV-2b isolates more prevalent in USA
- ARE PCV-2b ISOLATES MORE VIRULENT THAN PCV-2a ONES?

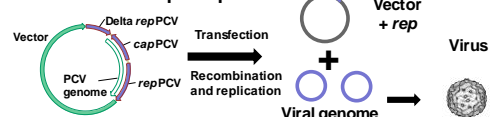
Aims

To verify:

- whether strains representative of each genogroup differ in virulence
- whether the capsid motif, specific to the genogroup, is involved in PCV-2 strain virulence

Parental and mutant DNA clones

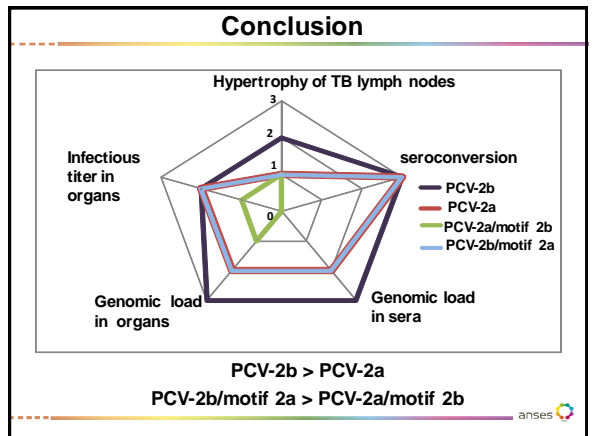
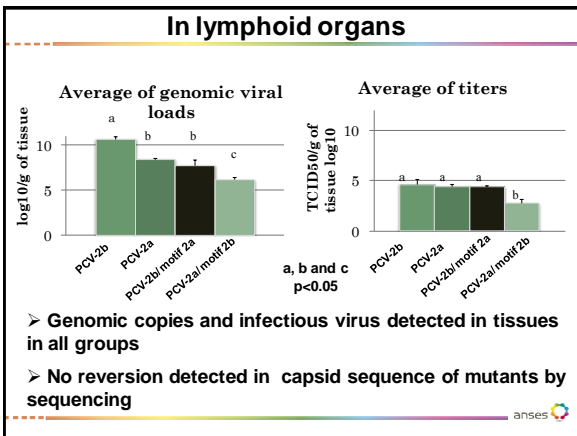
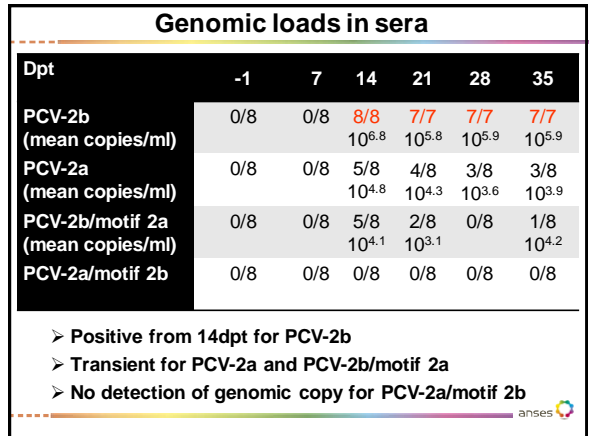
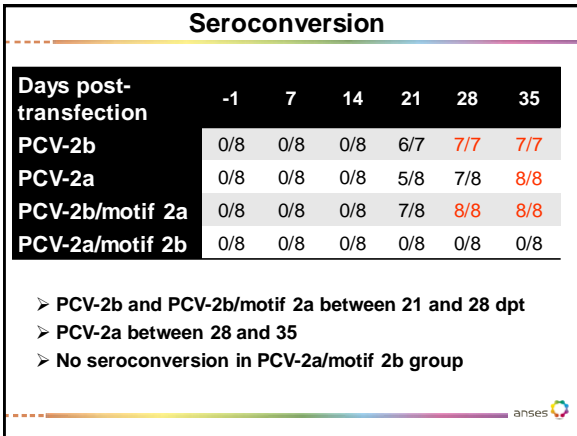
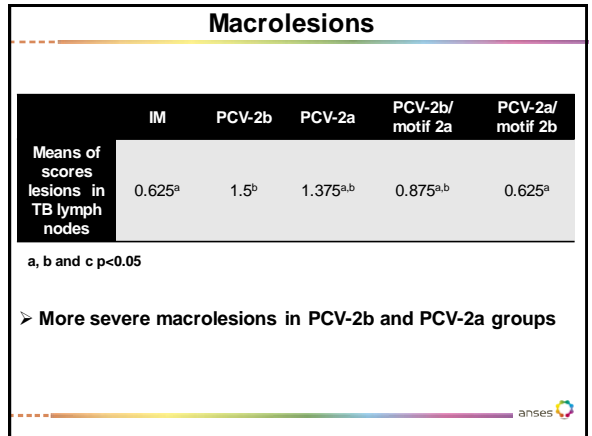
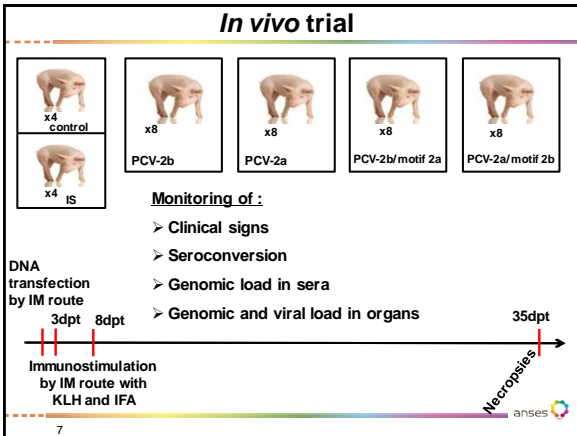
● Infectious clone principle:



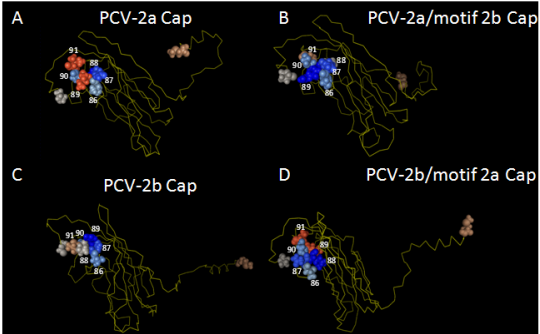
● Parental clones



Both parental and mutant clones were infectious *in vitro*



Hypothesis and perspectives



Tri-dimensional structure of capsid must be done



Acknowledgements

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