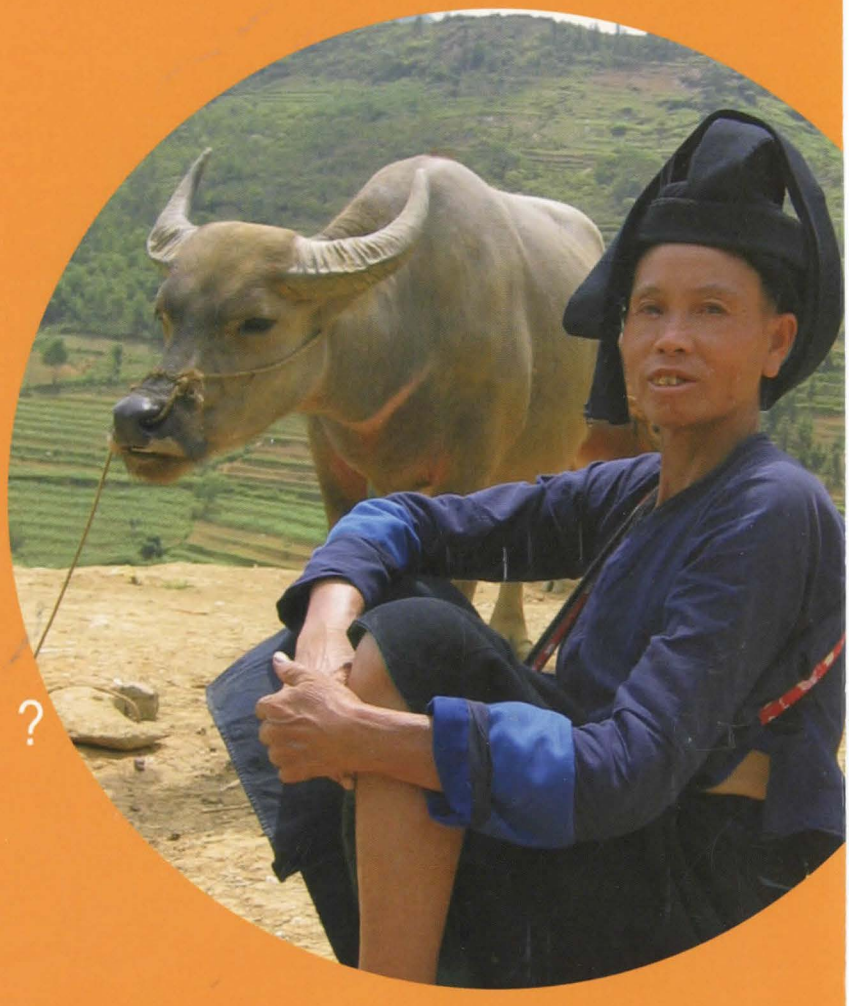
Proceedings

The 12th International Conference of THE ASSOCIATION OF INSTITUTIONS FOR TROPICAL VETERINARY MEDICINE



Does control of animal infectious risks offer a new international perspective ?

Montpellier, France
20-22 August 2007

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CONTROL OF AFRICAN SWINE FEVER VIRUS BY SIRNA

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ABSTRACT

African Swine Fever (ASF) is a highly contagious, viral disease of pigs caused by an Asfivirus. It can cause up to 100% of mortality in domestic pigs and European wild boars, although varying degrees of virulence have been shown. In contrast, the infection is unapparent in African wild suids (warthogs, bushpigs, giant forest hogs). There is no treatment or vaccine to control this severe disease. To address this issue, we are currently working on the development of an attenuated vaccine and new generation of biological antivirals. For the generation of attenuated ASFV vaccine strains, we envisage to delete the 10 Kb region located 23638-33336 in the genome, which includes nine genes that are thought to determine the virulence of ASFV. Of these 9 genes, 4 (A104R, A118R, A151R and A240L) have unknown function in the virus replication cycle. To establish the importance of these genes, we have used the RNA interference approach. RNA interference is a natural biological process initially described in plants [Fire and Mello in 1998]. It a natural cell mechanism by which small interfering RNAs (siRNAs) of about 20 nucleotides operate to downregulate the expression of a gene by targeting and cleaving its mRNA (post-transcriptional gene silencing). The 4 ASFV genes of a Spanish strain isolated in 1971 (Ba71v) were cloned and sequenced. The sequences were checked and compared with the reference sequence available in GenBank (accession number ASU18466) before to be sent to Ambion for siRNA design. We initially received 17 siRNAs from Ambion of which, 3 were directed against each of the 4 genes of interest and 5 were directed against B646L encoding the essential viral capsid protein (control of siRNA efficacy). Preliminary results of the siRNA evaluation indicate that A151R and as expected B646L, are essential genes for virus replication.

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