

Development of endogenous retrovirus (PERV)-free strains utilizing characteristics of Vietnamese native pigs

Highlights 2020

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Formerly known as SATREPS Project for “Establishment of Cryo-bank system for Vietnamese native pig resources and Sustainable production system to conserve Bio-diversity” which ended in May 2020, it is now aXis Project for “Development of endogenous retrovirus (PERV)-free strains utilizing characteristics of Vietnamese native pigs, starting in April 2020.

Amid Covid-19 pandemic, the Japanese team under the leadership of Dr. Kazuhiro Kikuchi, NARO is unable to visit Vietnam until this day. Despite the situation, research works are progressing, thanks to the spirit of cooperation and ingenuity of both the Vietnamese team and the Japanese team. In this issue of Highlights 2020, updates of some activities are introduced.

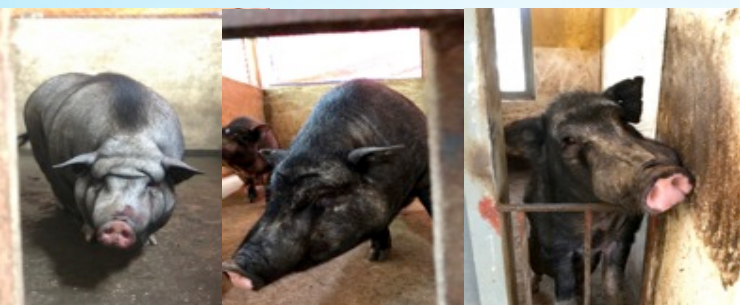
The 1st web-based meeting was held on 3rd September to introduce the new aXis Project: its objective, three research subjects (RS) and activities. The 2nd web-based meeting was held on 9th November, followed by a meeting of RS 1 & 2 teams on 26th November.



Disease monitoring continued at Thai Nguyen breeding facilities by VNUA team. On 3rd October, VNUA team visited Thai Nguyen Center and took blood samples of 11 pigs. The results of ELISA tests show that antibodies for FMD and PRRS were not detected in any of the 11 pigs, while CSF detected in 10 pigs out of 11*.



* The pigs were vaccinated against CSF in 2019.



Ear tissue sampling of the new born piglets was carried out by Thai Nguyen team and sent to NIAS key laboratory for measurement of PERV copy number. The piglets with the lowest PERV copy number will be used for the breeding of the next generation.

As of now, G2 pigs used for breeding of the next generation show the mean PERV copy number of 7.512, compared to the same for G0 (8.807) and G1 (9.312).



Experiments are in progress in Japan for production of PERV-free embryos using cells from Japanese wild boars with low PERV copy number (around 10-30) by utilizing genome editing. Several methods and approaches are used to knock out PERV including the very conventional method, Tet-ON system, but no cell lines with zero PERV copy number was established. Currently, a new method called modified Cas9 (Nick) is being experimented.

New generation born at Thai Nguyen Center

There have been four deliveries from G1 parents between April and July, and three deliveries from G2 parents between November and December.



Web-based visit to Thai Nguyen Center breeding facilities was conducted on 10th December 2020, thanks to Mr. Can, Thai Nguyen Center and Dr. Nga, VNUA, who toured around the breeding facilities making full use of the internet tools. The visit was helpful to the Japanese team to better understand the pig management at Thai Nguyen breeding facilities and to propose effective biosecurity measures for prevention of infectious diseases such as ASF, African Swine Fever still prevalent in Vietnam including Thai Nguyen Province.

