



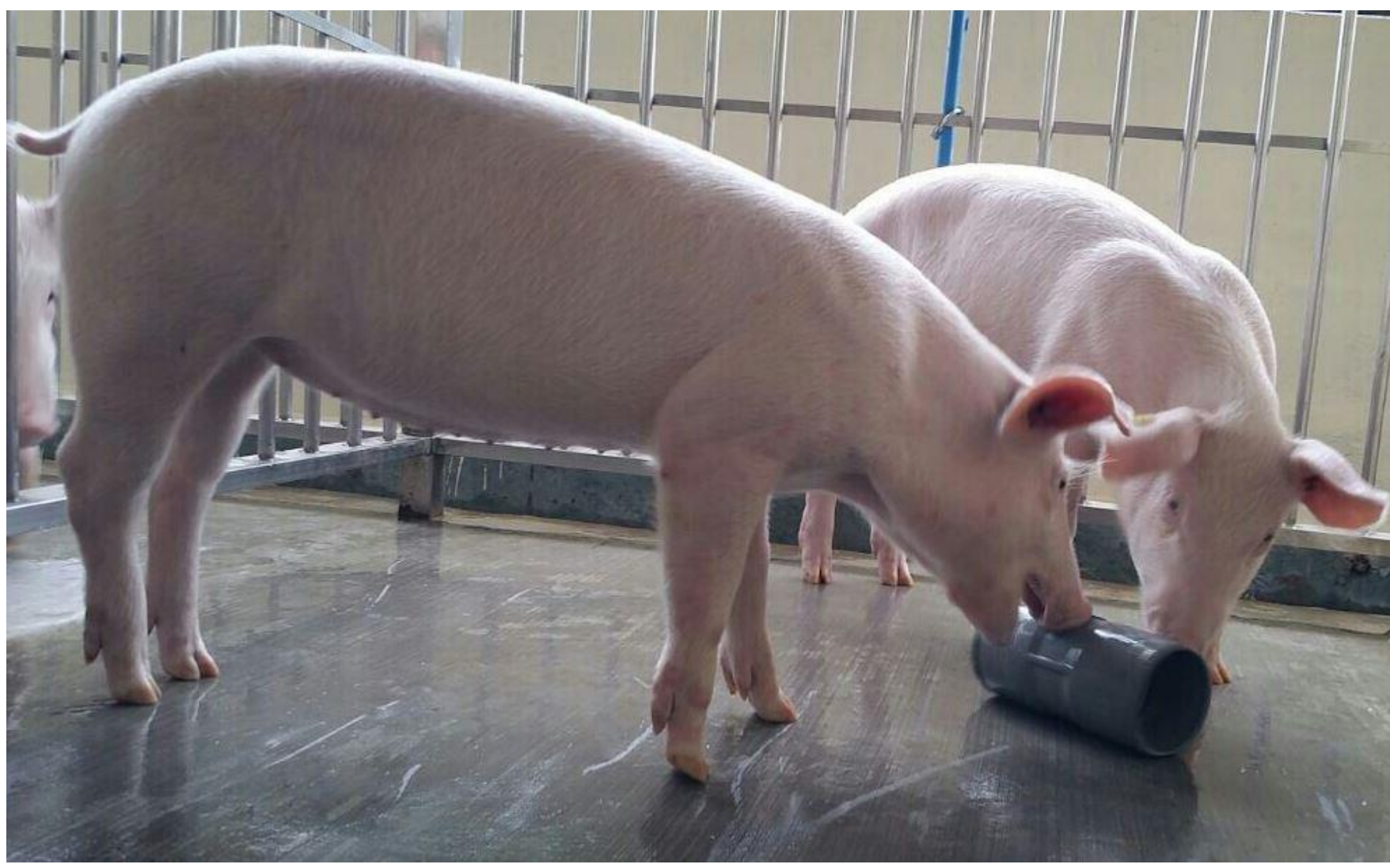
Singapore Healthcare Management 2017

Transforming the Pathogen Screening Program of NLARF domestic bred pigs into global standard to minimize zoonotic disease risk exposure of users

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Introduction

The **National Large Animal Research Facility (NLARF)**, is the sole provider of high health status domestic pigs for use in bio-medical research in Singapore. NLARF maintains a herd of imported breeders and it produces offspring from its local breeding program.



The breeding program is under SEMC and NLARF's animal care program accredited by **AAALAC International** (*Association for Assessment and Accreditation of Laboratory Animal Care*), the global gold standard in recognizing laboratory animal facilities. NLARF produced pigs

are used by principal research investigators for research and workshops from different academic, healthcare and research institutions i.e. Singhealth hospitals and National centers, NUS, A-Star etc. There are a number of remarkable research projects in line with cardiac, metabolic and skin studies that have used NLARF pigs in the past years.

To maintain its role as a national resource for domestic pigs for research, NLARF has strengthened its commitment to maintain the "high health status of pigs" and provide assurance to users of controlled, if not zero exposure to zoonotic diseases. The improvement was executed by transforming the pig health screening program to meet global standards. The remarkable improvement was addition of twenty one (21) pathogens to be tested from the current seven (7) pig disease agents and seeking the services of reputable laboratories to run the test.

Objectives

- To create a global standard of pathogen screening and produce a comprehensive health report for domestic pigs for use in translational and bio-medical research.
- To achieve the goal in maintaining "high health status pigs" and ensure that researchers and other users are not exposed to zoonotic diseases.

Methodology

- NLARF led the formation of Veterinarian group from key pig users for research i.e. NUS Comparative Medicine (NUS-CM) and Biological Resource Centre (BRC). The group was coined "pig network".
- The pig network discussed the primary disease agents that should be added to the list to be tested. The inclusion list was based on the zoonotic potential of disease organisms, list of local notifiable pig diseases as determined by Agri-Food and Veterinary Authority (AVA) and international lists of priority pathogens.
- After the list was finalized, a total of 30 disease agents were identified and the sampling was executed immediately and sent to recognized laboratories in Singapore such as AVA, Quest, NLARF Diagnostic and Duke-NUS One Health Laboratory.

Results & Conclusion

- After receiving the test results, NLARF shared its first ever comprehensive pig health report as shown below.

SingHealth
NUHS
National University Health System

National Large Animal Research Facility

HEALTH MONITORING REPORT

Name and Address of Facility : **National Large Animal Research Facility, 71 Lorong Chencharu, Singapore 769199**

Date of Issue : **18 May 2017** House/Shed No. : **Pig Shed A & B** Date of Sampling : **7-21 February 2017**

Species : **Sus Scrofa** Breed/Type : **HHS Landrace/Yorkshire**

A. Viral Profile

No.	Virus	Test Result	Test Lab	Test Method
1	Parvovirus	19/30 ¹	AVA	HI
2	PRRS virus	0/30	Duke-NUS	qPCR
4	Herpesvirus (<i>Aujeszky's disease</i>)	0/30	AVA	SNT
5	Pestivirus (<i>Classical Swine Fever</i>)	0/30	AVA	ELISA

¹Parvo+ results = 15% (all tested sows/boar that were vaccinated with Parvo.), 52% (~30 days old piglets), 26% (~75 days old pigs), 5% (>150 days old pigs); suggestive of residual maternal antibody.

B. Bacterial Profile

No.	Bacteria	Test Result	Test Lab	Test Method
1	<i>Brucella abortus</i>	0/30	AVA	Agglutination test
2	<i>Streptococcus suis</i>	0/30	AVA	Bacterial culture
3	<i>Leptospira interrogans serovar pomona</i>	0/30	AVA	MAT
	serovar <i>Grippityphosa</i>	0/30	AVA	MAT
	serovar <i>tarassovi</i>	0/30	AVA	MAT
	serovar <i>icterohaemorrhagiae</i>	7/30	AVA	MAT
4	<i>Actinobacillus pleuropneumoniae</i>	0/30	AVA	Bacterial culture
5	<i>Haemophilus parasuis</i>	0/30	AVA	Bacterial culture
6	<i>Streptococcus beta hemolytic</i>	0/30	NUS-CM/Quest	Bacterial culture
7	<i>Pasteurella multocida</i>	0/30	Duke-NUS	qPCR
8	<i>Bordetella bronchiseptica</i>	0/30	AVA	Bacterial culture
9	<i>Mycoplasma hyopneumoniae</i>	0/30	Duke-NUS	qPCR
10	<i>Methicillin Resistant Staphylococcus aureus (MRSA)</i>	0/30	SGH Lab	Bacterial culture

C. Parasite Profile

No.	Parasitic agent	Test Result	Test Lab	Test Method
1	<i>Eimeria & Isospora sp.</i>	0/30	NLARF D-Lab	Fecal Smear
2	<i>Balantidium coli</i>	5/30	NLARF D-Lab	Fecal Smear
3	Other helminths	0/30	NLARF D-Lab	Fecal floatation
4	<i>Sarcoptes sp.</i>	0/30	NLARF D-Lab	Skin Scrape

Issued by : _____, Attending Veterinarian Date : _____

*This health report can not be circulated without written permission from Veterinarian who issued the report and NLARF Management. Please send request to the Veterinarian in-charge if details of test/results are required.

The first release of comprehensive health report earned positive feedback from users of NLARF. The continuing increase in percentage of pig intake and growing number of projects were indication of researchers' confidence in using NLARF bred pigs

