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## **COLLEGE OF NATURAL SCIENCES**

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### **PRESS RELEASE**

#### **New Developments in Pig Diseases (African Swine Fever (ASF))**

The genetic variations and the near complete sequence of the genome<sup>1</sup> of the African Swine Fever (ASF) have been determined. This is as a result of work by researchers led by Dr. Charles Masembe, a Senior Lecturer at the College Natural Sciences (CoNAS), Dr. Karl Stahl of the Swedish University of Agricultural Sciences (SLU) in Sweden and the BecA-ILRI<sup>2</sup> team. This is a major development to better understand the dynamics and spread of African Swine Fever (ASF) between countries on the African continent.

The sequence of the genome of the ASF virus will contribute to a broader research initiative that addresses ASF and its movement between epidemics in African countries.

ASF is a devastating viral disease that is endemic in Uganda, and is a major constraint to pig production in the country; periodically killing 90 –100 percent of affected animals and has neither treatment nor vaccine. ASF is one of the two major problems affecting pig rearing in Uganda alongside lack of knowledge on the genetic variations and diversity of the pig breeds and populations present in Uganda.

It is important to note that Uganda has the largest and fastest growing pig production in Eastern Africa, with the pig population standing at 3.2 million. This production has become very attractive throughout the country as a means of food, income and employment, since pigs are considered “walking banks” in the local communities. Seventy five percent of pig keeping is found in the rural areas, and is mostly practiced by women.

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<sup>1</sup> A genome is an organism's complete set of DNA, including all of its genes. Each genome contains all of the information needed to build and maintain that organism. (<http://ghr.nlm.nih.gov/handbook/hgp/genome>)

<sup>2</sup> The Biosciences eastern and central Africa (BecA) Hub is an initiative developed within the framework of Centres of Excellence for Science and Technology in Africa. Hosted and managed by the International Livestock Research Institute (ILRI) in Nairobi, Kenya, the BecA Hub provides a common biosciences research platform, research-related services and capacity building opportunities to the region and beyond. The Hub aims to increase access to affordable, world-class research facilities and to create and strengthen human resources in biosciences and related disciplines in Africa.

In general, the aims of the research are:

- To provide a valid estimate on the prevalence, incidence and dynamics of the infection, necessary for design of surveillance and control strategies, and which will serve as a base for a future thorough assessment of the economical impact of the disease
- To provide an increased insight into the dynamics and evolution of the virus within the different hosts, aiming at understanding epidemiological patterns, evolution and extent of gene flow in the pathogen.
- To provide knowledge on the population genetic structure of wild and domestic pigs in rural Uganda with the aim to investigate factors that determine refractoriness.

Alongside the determination of the genome, the Preliminary observations of the research are:

- Some sero-negative pigs have tested virus positive. This means that such pigs can act as a potential reservoir in the spread of ASF
- The genotype of ASFV that is circulating in Uganda is Genotype IX, and there are no significant genetic variations in time and space, during and between epidemics.
- Domestic pigs are potential reservoirs of new and emerging viruses

As a result of the research, the following achievements have been realized to-date:

- 1) Winning of the ACBF 2011 Award. This was awarded to Charles Maseembe at BecA-ILRI for his contribution towards metagenomics and full genome sequencing of African swine fever virus from clinical field samples.
- 2) The prestigious Linnaeus- Palme<sup>3</sup> student teacher exchange program has been won
- 3) Winning of a SIDA post doctoral grant that will enable a further genetics research on the conservation of the domestic pig and control of African swine fever in Uganda.
- 4) The research team has presented their research results at various fora internationally. At one of the meetings, Dennis Muhangi (PhD Candidate working on the research) was awarded the best Young Epizone Poster presenter at the meeting and 200 Great Britain pounds to contribute to his research efforts.
- 5) ASF information dissemination workshops in Masaka region: 11 workshops have been conducted in the region. Pig farmers and other stakeholders now have a better understanding of the dynamics and biosecurity approach for ASF control.

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<sup>3</sup> The Linnaeus-Palme is a programme for teaching staff and students at university first-cycle (undergraduate) and second-cycle (graduate) level that aims to strengthen Swedish educational institutions' cooperation with universities in developing countries in order to expand and increase global contacts within higher education. The Linnaeus-Palme programme aims to stimulate cooperation based on mutual benefit between higher education institutions in Sweden and developing countries.

The lead researchers are working with graduate students at both PhD and Masters levels. The investigations are collaboration between the Department of Biological Sciences in CoNAS and the Swedish University of Agricultural Sciences (SLU) funded under a SIDA/Makerere bi-lateral collaboration.

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