<table>
<thead>
<tr>
<th>Title</th>
<th>Genome Characteristics and Transmission Dynamics of African Swine Fever, at the Livestock-Wildlife Interface: Pathways to the Control of Transboundary Animal Diseases</th>
</tr>
</thead>
</table>
| PI    | Charles Masembe (PhD)  
Department of Biological Sciences, Makerere University, P.O. Box, 7062, Kampala  
Email: cmasembe@zoology.mak.ac.ug; cmasembe@gmail.com  
Phone: +256-712455987 |
| Co-researchers | Vincent Muwanika (PhD)  
College of Agricultural and Environmental sciences (CAES); Molecular Biology Lab, P. O. Box, 7298, Kampala  
Email: vmuwanika@caes.mak.ac.ug  
Phone: +256-782904005  
Ademun Rose (PhD)  
National Animal Disease Diagnostics and Epidemiology Center, Ministry of Agriculture, Animal Industry and Fisheries, P. O. Box 513 Entebbe,  
Email: ademunrose@yahoo.co.uk  
Phone: +256-772 504746 |
| Purpose | The proposed project will together with pig farmers carry out a participatory epidemiology approach to design pathways to prevent and control African swine fever for improved pig value chain production in central, Eastern and northern Uganda. |
| Project Summary/Abstract | Uganda is the third largest pig producing country in Africa. This pig population is estimated at 3.6 million, and the pigs are kept mostly by smallholder farmers. This pig industry is threatened by African swine fever virus (ASFV) disease, which is a fatal, contagious viral haemorrhagic disease of domestic pigs, causing up to 100% mortality with no vaccine. This study will use a community participatory epidemiology and molecular characterization approach to develop community-derived control strategies and genetic characteristics of the virus. Specifically, the project will: work with communities to investigate specific ASF farmer knowledge problems and identify best-bet solutions for disease control; investigate the prevalence |
of ASFV in disease outbreak situations and in apparently healthy domestic pigs; undertake molecular characterisation and genome sequencing of ASFV for comparison and elucidation of virus transmission in time and space; and train graduate and undergraduate students in using participatory and molecular epidemiology tools to design disease control strategies for improved livelihoods and food security. The project will be implemented by two MSc and 4 undergraduate students who will closely work with the communities.

<table>
<thead>
<tr>
<th>Country and Specific Location(s)</th>
<th>Makerere University Genetics Laboratory and selected communities to be identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participating Institutions</td>
<td>Makerere University, National Animal Disease Diagnostics and Epidemiology Center, Ministry of Agriculture, Animal Industry and Fisheries, Uganda</td>
</tr>
</tbody>
</table>

| Start Date                        | Jan, 2014                       |
| End date                          | Dec 2016                        |
| Amount of Funding                 | $65,000                         |
Charles Masembe (PhD)
Dr. Charles Masembe is a veterinarian, molecular geneticist and Associate Professor, with teaching and research experience in molecular genetics, diagnostics, evolution and epidemiology of important diseases of domestic animals, mainly Foot-and-Mouth Disease, African swine fever, and pathogen discovery. He has an MSc in Environment and Natural Resources Management (Makerere University), a PhD in Molecular Population Genetics (Makerere and Copenhagen University), and Post-Doctoral training (Makerere, Copenhagen University, and the Technical University of Denmark). I have been a visiting scientist under the Africa Biosciences Challenge Fund at the Biosciences eastern and central Africa (BecA-ILRI) with a main emphasis on Metagenomics, and a Visiting Research Scientist at Yale School of Public Health and the Swedish University of Agricultural Sciences. Through the opportunities and platform provided by RUFORUM and other collaboration partners he has excelled in capacity and research-network building. Charles is now a Wellcome Trust fellow under the Intermediate Fellowship in Public Health and Tropical Medicine program; with a major focus on “Transmission dynamics of African swine fever in an endemic setting at the livestock-wildlife interface” (http://asf.mak.ac.ug). Charles is experienced in the molecular biology and serological techniques needed for sampling and genetics/disease investigations in a variety of species. Research in his team has generated and published scientific information for conservation of Africa's wildlife resources and patterns of disease transmission at the wildlife-domestic interface. This expertise has grown to a level that has genetically characterised animal epidemics with particular emphasis on foot-and-mouth disease in the African Great Lakes region, and is aimed at unraveling livestock-wildlife disease interactions to design efficient disease control strategies for FMD. Charles’ team has a vibrant research facility, which has in the recent past had active research on a diversity of projects (e.g. EU-FP7-NEXTGEN; Livestock-Wildlife Diseases in East Africa-DANIDA; Molecular tools for schistosome biology EU-CONTRAST; Conserving biodiversity in Uganda DARWIN INITIATIVE; Smallholder pig value chain development in Uganda; ASF in Uganda-FORMAS).
Some peer reviewed publications


Some Grants and Projects Awarded

- 2010: Next generation methods to preserve farm animal biodiversity by optimizing present and future breeding options (EU-FP7).
- 2010: Fisheries and aquaculture adaptation and conservation strategies in Uganda’s changing climate (RUFORUM).
- 2011: Linnaeus-Palme Exchange Programme between Makerere University and the Department of Biomedical Sciences and Veterinary Public Health (BVF) at the Swedish University of Agricultural Sciences (SLU). (Linnaeus-Palme).
- 2011: Swedish Research Links to Understanding the dynamics and spread of African swine fever in Uganda (Sida)
- 2014: Population genetics of traditional goats: NARO.