Piglets (Jo WIndmann, porkbusiness.com)

Context

- ASFV is a lethal viral disease of pigs, endemic in most SSA countries and continues to expand into new territories in Europe and Asia
- ASFV is a major economic threat to global pig industry.
- Currently, there's no vaccine against ASFV.
- Previous approaches to generate attenuated ASFV vaccine was cumbersome and largely inefficient
- Urgent need to deploy enabling technologies to generate efficacious vaccine to combat this disease.

Our innovative approach

- We are employing the highly efficient CRISPR/Cas9 and innovative synthetic biology approaches to fast-track rational development of ASFV vaccine candidates.

NUTRITION & FOOD SECURITY

Accelerating African Swine Fever Virus (ASFV) Vaccine Development via CRISPR-Cas9 and Synthetic Biology Technologies

- African swine fever causes up to 100% fatality in pigs, leading to severe economic losses to the pig sector.
- There is currently no commercially available vaccine
- Tackling ASF through the development of a vaccine will improve the livelihoods of small-holder pig farmers in SSA

CGIAR RESEARCH PROGRAM ON Livestock

LIVESTOCK & HEALTH

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Outcomes

- Successfully established CRISPR/Cas9 system for editing ASFV genome.
- Synthetic Biology Platform for rapid modification of ASFV genome.
- Generated **6** ASFV live-attenuated vaccine candidates due to be tested in pigs.
- One manuscript under preparation.

Future steps

- Scale up generation of more live-attenuated ASFV vaccine candidates.
- Post-2021 potential: wider applicability and relevance: these versatile technologies can be applied in generating vaccines for other pathogens; bacteria and parasites, etc.

Partners

FLI (Germany), J. Craig Venter Institute (USA), ILRI.

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