**Planting the orchard – an ILRI livestock vaccine initiative (ILVAC)**

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### The problem
Infectious livestock diseases feature prominently among the constraints that impede livestock agriculture. Vaccines can reduce the high rates of livestock mortality and morbidity and are the most effective inventions for disease control, especially in under-resourced agricultural systems.

**Vaccine-based solutions:** The goal of ILRI’s Vaccine Biosciences group is to build a hub of research excellence dedicated to developing vaccine-based solutions to reduce disease burdens that limit livestock productivity in smallholder and pastoral farming systems.

**New science, new opportunities:** Paradigm shifts in science, underpinned by whole genome sequence information, high throughput screening methods and informatics; now enable acceleration of the pace of research by adopting a holistic approach to vaccine, diagnostics and therapeutics development.

### A focused approach: ILVAC with several partners is initially focusing on a set of priority diseases: African swine fever (ASF), contagious bovine pleuropneumonia (CBPP), East Coast fever (ECF), peste de petits ruminants (PPR) and Rift Valley fever (RVF). The creation of a vaccine research platform, where generic techniques and processes will be implemented, gives us the ability to tackle other disease constraints. These activities are aligned with the CGIAR Research Program on Livestock and Fish.

### New generation vaccines, a risky but high-reward venture: This research is complex in nature and requires long-term investments. Several lead vaccine molecules for CBPP, ECF and RVF have been identified, while research on ASF is just starting and PPR work is under discussion.

### Achieving impact: To meet its objectives and achieve impact in the discovery to delivery pathway ILVAC works with the BecA-ILRI Hub, CGIAR Research Programs, as well as national and regional academic, public, private and development sectors.

### ILVAC – a vaccine platform

- Infectious disease research: basic & applied
- Improved vaccines and diagnostic tools
- Antibody technologies
- Cellular technologies
- Vaccine technologies
- Genomic technologies
- Diagnostic technologies
- African swine fever
- Contagious bovine pleuropneumonia
- East Coast fever
- Peste de petits ruminants
- Rift Valley fever
- Private sector
- GALVmed
- CRPs
- NARS
- Inter-gov agencies

Consoritia for research & product development and capacity development

### BASIC RESEARCH

- Increase our knowledge base
  - “Knowledge lays the foundation for science & innovation”
  - Study host-pathogen interactions
  - Map immune responses to infection
  - Characterize pathogen virulence
  - Investigate disease epidemiology
  - Dissect pathogen biology & diversity
  - Identify candidate vaccine and diagnostic molecules

### APPLIED RESEARCH

- Develop new vaccines & diagnostics
  - “Vaccines are highly effective anti-disease interventions”
  - Assess candidate vaccine molecules
  - Assess attenuated pathogens
  - Thermo-stabilize pathogens
  - Develop easy to use diagnostic tools
  - Assess different vaccination systems
  - Facilitate translation of research outputs to commercial products

### Vaccinology capacity questions

- How do we stimulate and sustain African vaccine R&D pathways to achieve impact?
- How can we grow a biotech and vaccine manufacturing sector in Africa?

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