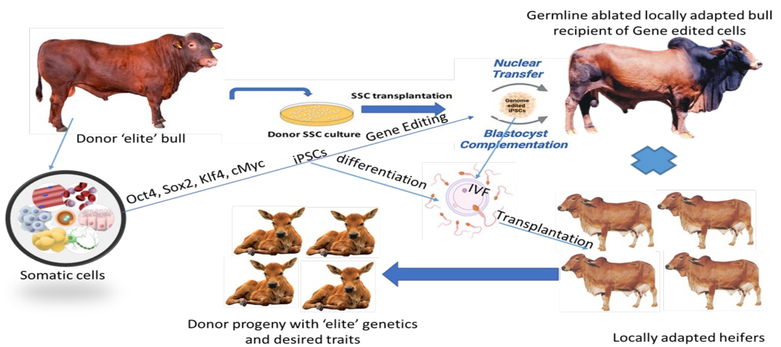
Nguni cattle, Photo by Christian Tiambo

Development of African bovine pluripotent stem cell resources

The challenge

- Africa Indigenous cattle breeds are under threat of genetic diversity extinction.
- Identifying and testing preferential alleles for important traits for conservation in tropical cattle is difficult ,costly and requires long-term measurements over many years
- The development of enabling cell-based technology, that can support and inform this process will shorten timelines
- This will be done at ILRI, Kenya
- Beneficiaries are Farmers and Kenyan government .

Our innovative approach



Stem cell and Genome editing technologies from somatic cells as solution for the conservation and restoration of African indigenous cattle breed genetic resources, and to accelerate precision breeding and fast delivery of elite germplasms.

- Pluripotent stem cells (PSCs) possess the advantages of self-renewal and differentiation.
- These cells are established from embryos or somatic cell reprogramming, characterized, karyotyped and biobanked.
- Gene editing and assisted reproductive technologies will enable fast dissemination of desired traits for improved productivity, adaptation and resilience.

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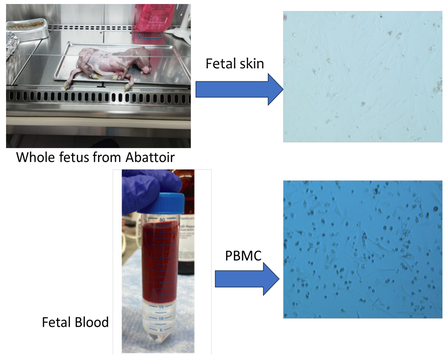
Outcomes



African bovine fibroblast lines Established de novo for iPSC lines production

Next steps

- Reprogramme specific cell lines
- Development of a living, accessible, biobank beyond Kenya
- Gene editing for production of African cattle with desired or preferred traits and demand-led breeding
- Provide resources and technical capacity for accelerated reproductive technologies.

Partners

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