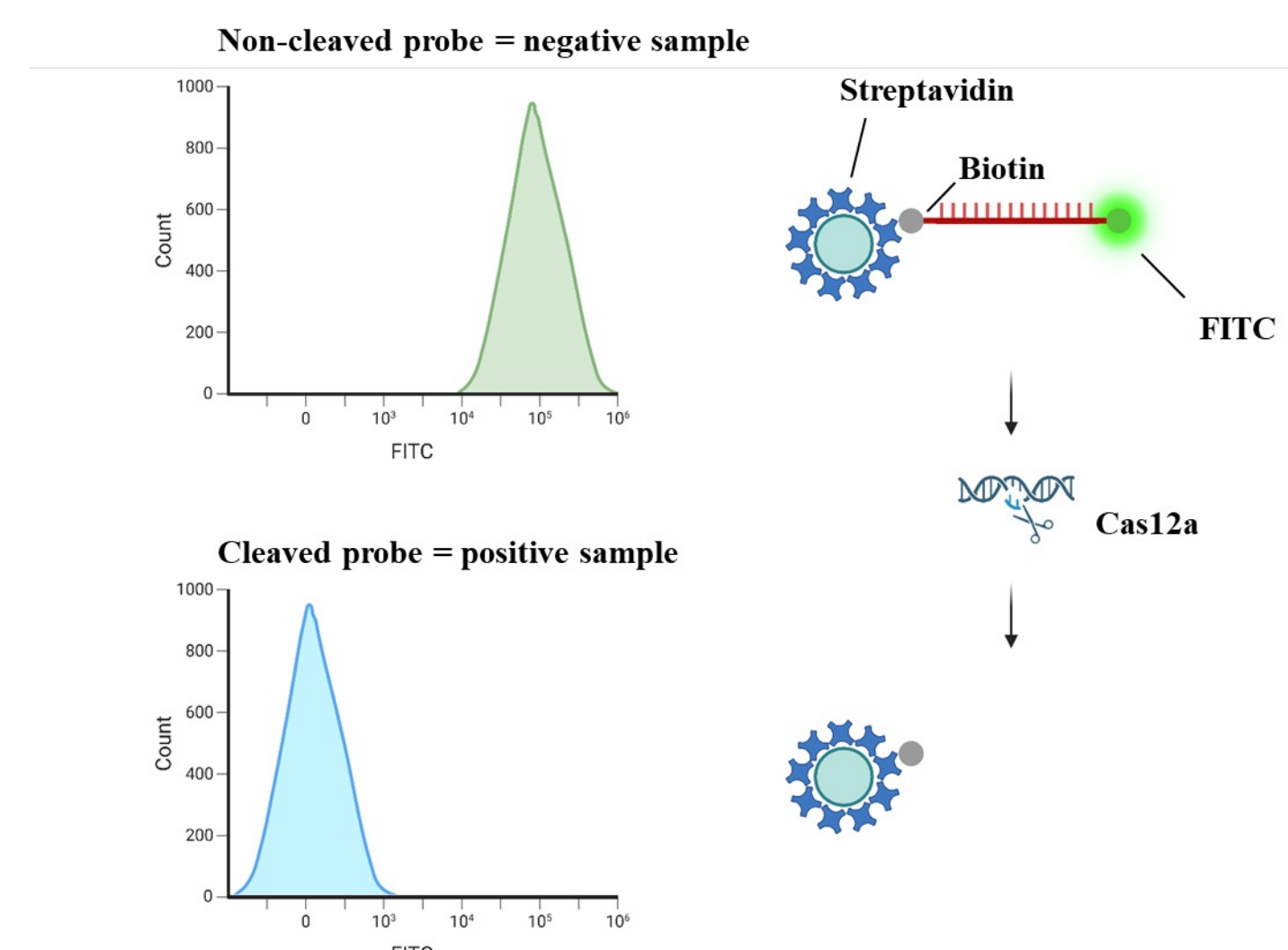
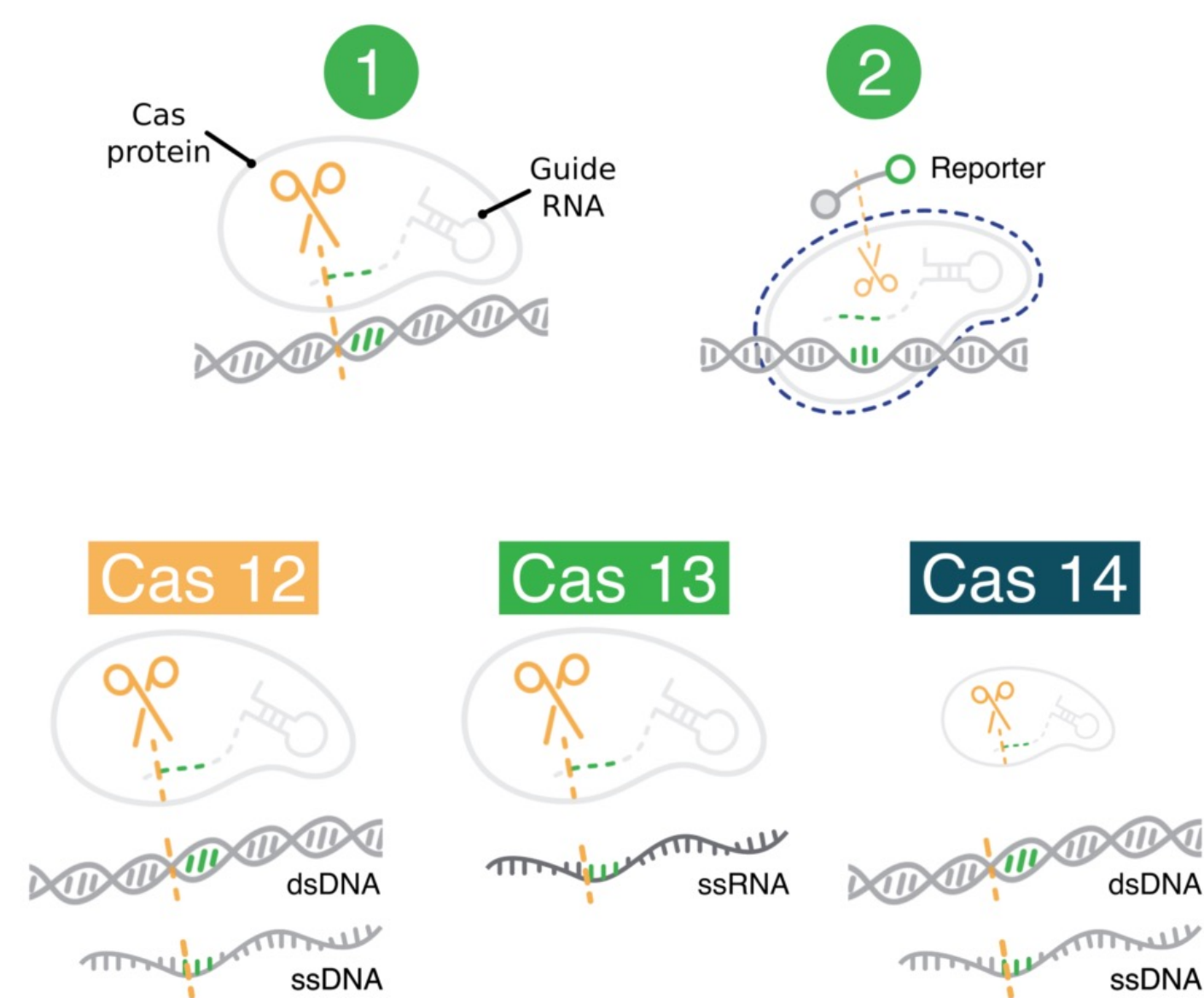




East Coast fever (ECF)

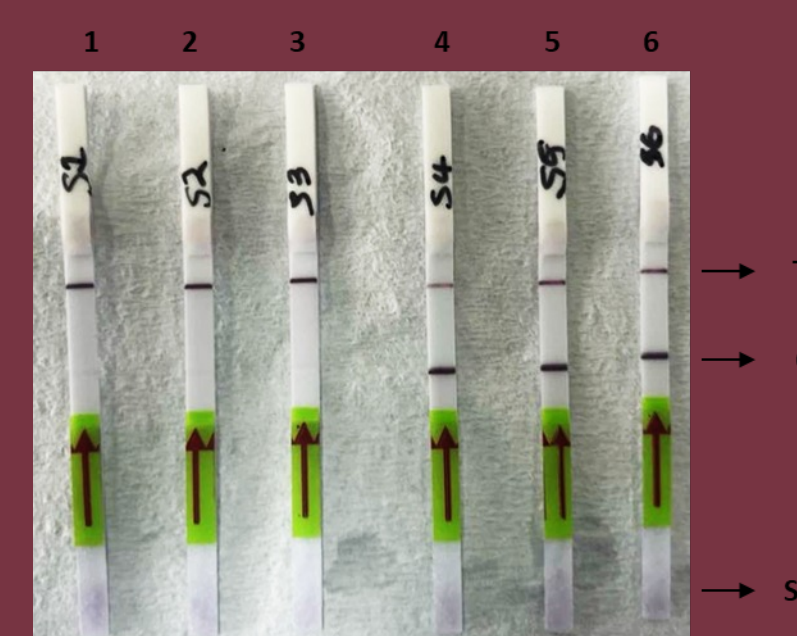
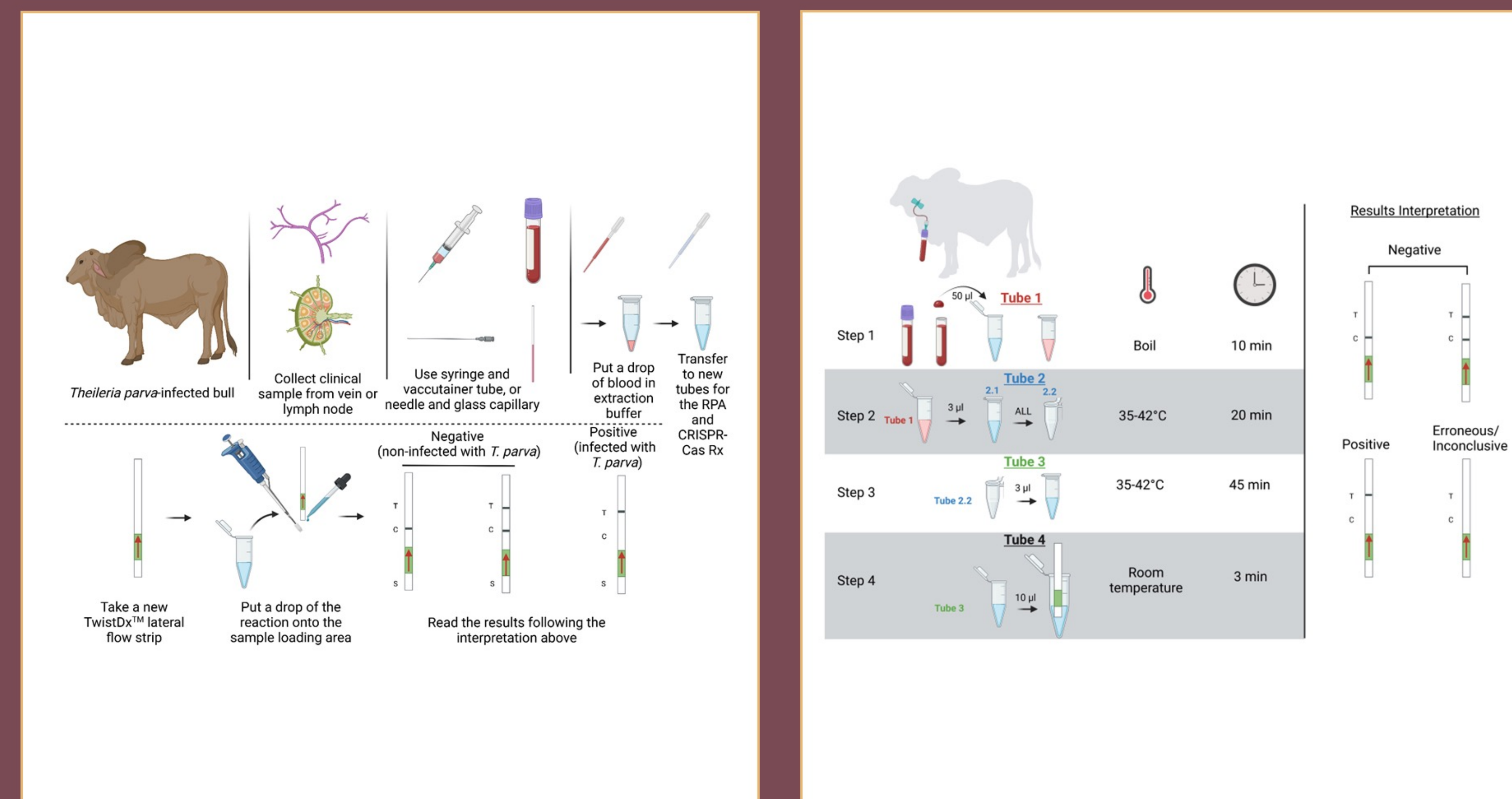
- ECF is a tick-borne disease that kills 1 cow every 30 seconds, with annual economic losses of over USD 500 million.
- The current diagnostic tests are impractical for farm-level or pen-side diagnosis and lack sensitivity to pick infections early for proper treatment.

Our innovative approach



- We applied the latest gene editing technology, CRISPR, and its associated Cas protein to develop a pen-side test for ECF.
- The test has been adapted to field or farm testing by including an isothermal (RPA) pre-amplification step and a lateral flow strip readout format.

Novel CRISPR-Cas-powered pen-side test for East Coast fever



Authors: Robert Muriuki*, Maingi Ndichu, Samuel Githigia, Nicholas Svitek

Title/role: * PhD fellow

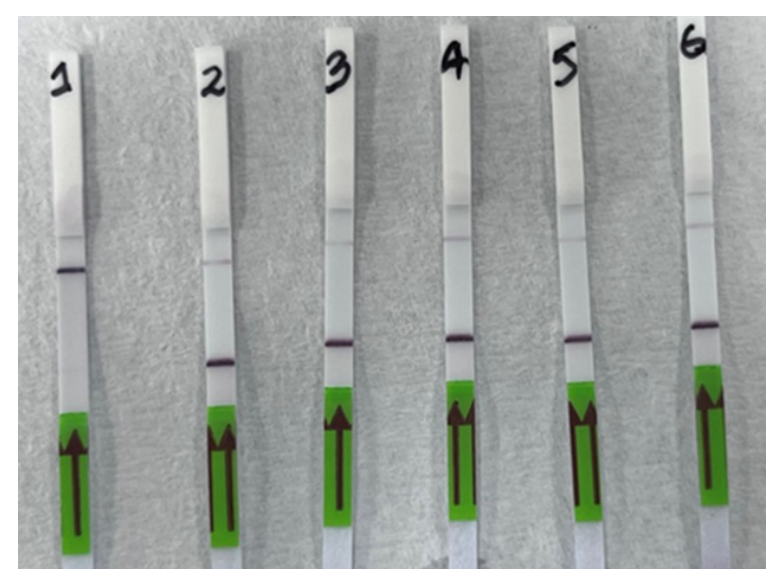
Email addresses: R.muriuki@cgiar.org, N.Svitek@cgiar.org

Outcomes

- First ever CRISPR-Cas pen-side test for the diagnosis of *Theileria parva* infections in cattle.
- This pen-side test is highly specific and can detect one *T. parva*-infected cell per 3 μ l of blood and up to eight different *T. parva* field isolates.
- The utilization of the test can be easily carried out using simple instruments like a boiling pot of water, and results are achievable in under two hours.

Next steps

- Two more CRISPR-Cas-based pen-side tests have been developed for Anaplasmosis and Babesiosis.
- A multiplex test will be developed to enable the simultaneous detection of these three tick-borne diseases.
- The next step will be to scale up these tests for development into widely accessible commercial products.



RPA/Cas12a Specificity for Anaplasma marginale

Partners