Seeding Labs

IMPACT NEWSLETTER

Fall 2024

On-site vaccine production now possible for livestock researchers in Uganda

Above: **Dr. Paul Kasaija** and fellow researchers at the National Livestock Resources Research Institute now have the capacity to **manufacture a tick vaccine on-site**, delivering hope for livestock farmers experiencing devastating losses to parasites.

In this issue:

Ranchers and farmers to be supported by new tick vaccine made in-country...

In Uganda, a rapidly growing country in East Africa, livestock plays an important role in everyday life. Nearly 60% of households depend on livestock for their income. So any threat to the livestock population is a major threat to the people in Uganda.

Which is why ticks are on the minds of so many people there. Tick-borne pathogens are common sources of livestock deaths and are frequently responsible for **devastating losses for Ugandan farmers**. In fact, the FAO estimated that over 50% of these farmers' annual costs go toward managing ticks and tick-borne diseases.

Ugandan farmers struggle to control the pests because the most common method is relatively ineffective at deterring the tick species that are most common in Uganda.

Those species—the brown ear ticks, blue ticks, bont ticks, and red ticks—have developed resistance to that method, which involves the chemical acaricide. An ineffective deterrent means more ticks; even a relatively small number of ticks can cause deadly infections and lead to financially-devastating livestock deaths.

Solutions through research

The National Livestock Resources Research Institute (NaLIRRI) exists to solve problems like these. An agency of the Ugandan government, NaLIRRI uses scientific research to find efficient solutions that will improve livestock productivity in Uganda. With ticks causing this much damage to the sector, finding a way to protect livestock is a top priority for the Institute.

New tick vaccine in Uganda ... *continued*

Researchers at NaLIRRI were confident that the answer was to **develop a vaccine** because vaccines have been effective at controlling acaricide-resistant tick populations in many other parts of the world.

Specifically, they focused on creating a vaccine based on the protein subolesin that could specifically target Ugandan tick species.

They are currently running vaccine trials to determine the most effective mix of subolesin and other vaccine components, and this requires them to **produce large volumes of purified proteins**. It also requires specialized equipment that they did not have access to.

The components of NaLIRRI's tick vaccine needed to be purified to 95%, a level requiring chromatography equipment that was out of reach. They had to spend precious time and money to have samples sent to Spain for purification.

The whole process was expensive and unsustainable. NaLIRRI needed its own equipment so they could **begin producing the vaccine on-site in Uganda**.

Meeting a need with essential equipment

For 15 years, Seeding Labs has perfected a solution to this particular problem: we work with our ever-expanding network to make scientific connections across the globe.

As a 2022 Instrumental Access awardee, we already knew and had worked with researchers at NaLIRRI. We were invested in their success and in the future needs of the Institute.

At the same time, we had existing connections to corporations that could supply the piece needed to begin vaccine production. As a result of our **longstanding relationship with Cytiva**, we were able to secure an AKTA Purifier 100, the exact piece of equipment the institute needed. It is slated to arrive later this year with vaccine production beginning shortly after.

The benefits of producing this vaccine for ticks could be tremendous for Uganda's development. The country's population is expected to double in the next thirty years, meaning consumption of their livestock will almost triple. A vaccine designed to target Uganda-specific ticks would be an incredible asset to **keep livestock safe and reduce losses**.

> **"Successful control of tick populations will boost growth of the animal industry and uplift the national economy since Uganda derives a significant proportion of GDP from the industry."**
>
> **Paul Kasaija, PhD**
> **National Livestock Resources Research Institute**

It may take some time before livestock in Uganda are vaccinated and free of ticks. But the prospect of a vaccine is much more likely now that NaLIRRI has the right equipment to manufacture it on-site in Uganda.

Above: Members of the Biosciences Department at the Animal Diseases Diagnostics Laboratory at NaLIRRI.

» To learn more about the ways Seeding Labs supports research for locally led development, visit **seedinglabs.org/research**

2024 in review: A year of growth for Seeding Labs and our partners!

February 2024

Seeding Labs and the United Nations Educational, Scientific, and Cultural Organization (UNESCO) entered into a Memorandum of Understanding, with each organization committing to "mobilize resources to build capacity" together "through joint and concerted cooperation."

This is the **first cooperative agreement between us and UNESCO**. The most exciting part: such a partnership opens up so many more avenues to support scientific capacity in developing countries.

August 2024

Thanks to the generosity of our donors, our **first-ever Instrumental Access shipment to Senegal** shipped out to the Université Cheikh Anta Diop de Dakar.

Because of huge increase in demand for medical science education, the Department of Histology, Embryology, and Cytogenetics was in need of equipment that could help them provide **practical skills for future physicians** focusing on providing care to those with reproductive complications.

Our global reach continues to expand each year! On the horizon for 2025: Egypt and Mongolia.

June 2024

Seeding Labs and the IZUMI Foundation welcomed **Dr. Gama Bandawe** *(above, far right)*, Senior Lecturer at the Malawi University of Science and Technology. One of Malawi's leading virologists, Dr. Bandawe updated us on the country's national virology center, which is now in its planning phases.

Both Dr. Bandawe and Seeding Labs CEO Melissa P. Wu, PhD presented at **IZUMI's annual partners meeting**, where they spoke on international collaboration, the importance of strong scientific institutions in strengthening health infrastructure in developing countries, and opportunities to expand health technologies in Malawi.

October 2024

Alongside corporate and NGO leaders in healthcare systems development, **Director of Corporate Relations Jennifer Raymond** presented to the "Collaboration and Learning Forum," organized by the Partnership for Quality Medical Devices.

At this consortium of NGOs and corporations, Jennifer shared how we measure and evaluate our impact at over 140 scientific departments in 41 developing developing countries.

It takes a large community to sustain our work! To support more milestones like these in 2025, please visit *https://donate.seedinglabs.org.*

Equipment leverages millions in funding for researchers across the globe

Scientists at well-resourced institutions face fewer barriers, making it easier to be productive, gain recognition, and compete for collaborations and external funding.

And when scientists and scientific institutes succeed, **their communities can better reap the benefits of science.**

We are proud that equipment from Seeding Labs has helped institutions secure their long-term success by making it possible for them to bring in more resources.

With financial security and a higher profile, these institutes are positioned to drive success for years to come, doing vital research and training for their communities.

$16.9 MILLION TOTAL ADDITIONAL FUNDING AWARDEES HAVE SECURED

78 % AWARDEES REPORTING IMPROVED DEPARTMENT REPUTATION

78 % AWARDEES REPORTING ABILITY TO ENGAGE IN NEW RESEARCH METHODS

Continued progress from the Institute for Tropical Medicine and Global Health

Way back in 2018, we told you the story of the Institute for Tropical Medicine and Global Health at the Universidad Iberoamericana (UNIBE) in the Dominican Republic. At the time, thanks to an influx of equipment from Seeding Labs, they had established the university's **first-ever research institute**, had brought on new staff, and won grants to start six new research programs.


SEEDING LABS IMPACT REPORT
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The ripple effects of your support two years later...

HIV Prevention in the Dominican Republic: A local campaign with a worldwide impact on global health

In 2016, the Universidad Iberoamericana (UNIBE) in the Dominican Republic didn't have any dedicated research labs. Today, they are leading the Caribbean's first clinical trial for an HIV preventative known as PrEP.

This transformation would not have been possible without you!

Your generosity allowed Seeding Labs to send more than 2 tons of scientific equipment to UNIBE. And this support gave Dr. Robert Paulino-Ramirez the foundation he needed to establish the Institute for Tropical Medicine and Global Health in 2017. UNIBE's first research lab in their 35-year history.

Thanks to your start-up support, the Institute has been making their mark at home and abroad ever since...

Stopping the Spread of HIV

It's estimated that 80% of HIV cases in the Caribbean are in Haiti and the Dominican Republic, two countries that share one island. But Dr. Paulino-Ramirez and his colleagues see

Continued...

The world has changed in those six years...and the researchers at UNIBE have been at the forefront of regional research to respond to the ever-present threat of infectious diseases.

One new research program, clinical trials for an HIV preventative known as PrEP, were an unmitigated success. Researchers were able to inform public health policy, providing the research basis for the national guide on the most effective ways to reach vulnerable populations and get them to adopt the preventative approach.

And during the COVID-19 pandemic, UNIBE once again teamed with Seeding Labs to become a **hub of testing and research** so that the Dominican Republic could effectively control the virus's spread.

Their future plans are equally bright. They are currently expanding their areas of resarch to support their efforts monitoring and preventing diseases throughout the region. In addition to their work combating HIV, they are pursuing research on **HPV infection in vulnerable populations** as well as emerging insect-borne diseases in the region.

We are proud that our contributions have catalyzed this vital institution's continued growth at the forefront of the Dominican's rapidly evolving infectious disease priorities.