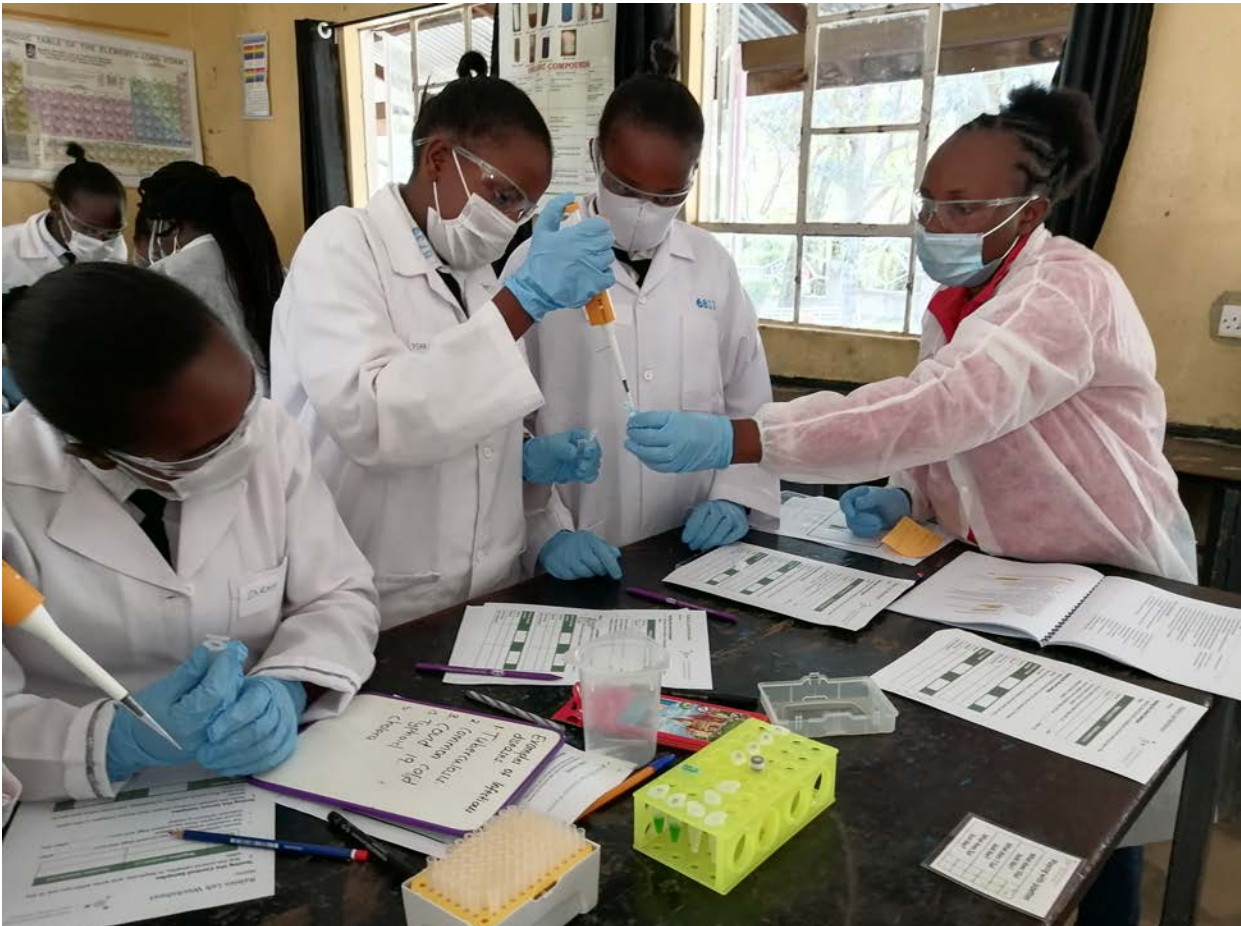


**REPORT ON THE KEAWARD-IVVN AFRICAN SCHOOL OUTREACH PROGRAM
(ASOP) ACTIVITY HELD AT NAIVASHA GIRLS SECONDARY SCHOOL, NAKURU
COUNTY, KENYA
12TH JUNE 2021**



Ms. Susan Njuguini, a research scientist with the National Museums of Kenya, assisting some girls during the interactive mock vaccination experiment during the outreach activity at Naivasha Girls Secondary School

**KEAWARD
JUNE 2021**

Acknowledgements

The IVVN African School Outreach activity at Naivasha Girls Secondary School was locally coordinated by the Kenyan Chapter of the African Women in Agricultural Research and Development (KeAWARD). It was carried out by ten (10) women scientists drawn from Kenya Agricultural & Livestock Research Organization (KARLO), International Livestock Research Institute (ILRI), University of Nairobi (UoN), Kenya Bureau of Standards (KBS), National Museums of Kenya (NMK) and the County Government of Nakuru. This international program which aims to mentor and inspire the next generation of women scientists is coordinated by the International Veterinary Vaccinology Network (IVVN). KeAWARD acknowledges with gratitude generous financial support towards implementation of this activity from the IVVN and the African Women in Agricultural Research and Development (AWARD) who continue to support KeAWARD's school mentorship and role modelling activities. KeAWARD also wishes to acknowledge the support and partnership of our host organizations which have continued to facilitate, encourage and offer in-kind support to the women researchers who always volunteer to facilitate the outreach. We also acknowledge the

logistical support provided by Naivasha Girls Secondary School led by the Principal, Madam Catherine Wandeto and the Agricultural Teacher Mr. Wainaina who mobilized and sensitized the students prior to our visit. KeAWARD also greatly appreciates the commitment and



The ASOP facilitators being received by the Principal, Naivasha Girls on arrival at the school

dedication of the ten women scientists who coordinated, prepared and delivered the interactive mock laboratory experiment at Naivasha girls. **Ahsanteni sana!**



Background

The International Veterinary Vaccinology Network (IVVN) has been running a Schools Outreach Programme with an objective of inspiring the next generation of African scientists through an interactive workshop delivered by female researchers from local universities and research institutes. So far, a total of 120 girls have been empowered through the IVVN programme in Kenya. The Kenyan Chapter of African Women in Agricultural Research and Development (KeAWARD) has identified several schools in different counties in Kenya which are being piloted by the Ministry of Education, Science and Technology as model learning Centre of Excellence for agricultural and scientific innovations. The Chapter plans to leverage on this government strategy to initiate activities in each of these STEM model schools focused on empowering female school learners through mentorship while contributing to achievement of SDG 5 on gender equality and empowerment of women and girls. In 2021, KeAWARD is partnering with IVVN through its African School Outreach Program (ASOP) to promote STEM courses and careers and inspire the next generation of Kenyan women scientists. The visit to Naivasha Girls Secondary School, the STEM Model school for Nakuru County was therefore to enhance the science skills of the girls while promoting STEM and the science of vaccinology. The activity was undertaken by accomplished female scientists who also motivated the girls by sharing their career and success impact stories to enhance their life skills. KeAWARD previously visited and role modelled in the school in 2018 and was excited to return to sustain the motivation and empowerment that was initiated.

Naivasha Girls

Naivasha Girls is one of the 47 Schools, one in each Kenyan County that have been identified and earmarked for the roll out of the Science, Technology, Engineering and Mathematics (STEM) model schools, an initiative of the Ministry of Education's Centre for Mathematics, Science and Technology Education in Kenya. The initiative hopes to inspire learners to excel in science subjects and mathematics through programs, policies and processes within and outside classrooms as well enhance, strengthen management and promote enrolment in STEM related subjects in the country. It is hoped that this will dramatically raise the number of students wishing to pursue STEM courses at the University level thus creating a strong base of young people with high technological knowledge and skills to drive industrialization and innovation efforts in the country. The school has also been identified and ear marked for the implementation of one of the Big Four Government agenda on Food Security. Naivasha Girls is a girls only boarding school with a student population of about 1000 students. The school has grown over the years and reflects a national outlook admitting students from every region in the country. It is a ranked among the best performing school in Nakuru County.

Building capacity for STEM mentorship: Training of trainers (ToT) of a new cohort of facilitators

Since 2016, KeAWARD has been actively running mentorship and role modelling activities in high schools to mentor, motivate, guide and coach schoolgirls in pursuing science subjects and careers while improving their personal leadership and management skills. School principals and the students have found these mentorship interactions very beneficial and over time there has been many invitations from school communities for KeAWARD women scientists to run the mentorship activities. Since the launch of the IVVN African Schools Outreach Programme (ASOP) in 2019, KeAWARD has partnered with IVVN to implement the interactive rabies laboratory experiment as part of the school's outreach program to enrich the role modelling/mentorship sessions the women scientists have been conducting. In its 2021 plan of activities, KeAWARD has planned to engage and mentor at least 200 schoolgirls. It was therefore needful to train a new cohort of facilitators passionate about mentorship to support the successful delivery of the outreach activities. Esther Kanduma and Tabby Karanja trained ten (10) new facilitators on 19th May 2021 at the Biotechnology Centre, Kenya Agricultural and Livestock Research Organization (KARLO) (a separate brief report is attached). Five of these newly trained facilitators participated in the Naivasha Girls and St. Loise Nanyuki Girls Outreach visits.



Newly trained facilitators, Ms. Celestine Makokha and Ms. Perpetual Wangui preparing reagents in readiness for the school visit

Kenya now has twenty (20) trained facilitators comprising of five males and 15 females with skills and experience to mount the outreach program including the hands-on rabies experiment.

Pre-visit preparations and COVID19 precautionary measures

Prior to the delivery of the outreach activity, a contact was made with the school and an introduction letter sent to the school. A date and all the necessary preparative requirements including putting in place COVID19 measures and following the Ministry of Health guidelines were agreed upon. A session to aliquote reagents and prepare plasticware and materials to be used during the hands-on

rabies experiment was carried out at the International Livestock Research Institute (ILRI) on 11th June 2021. The sorted materials were packed in the lab suitcase ready for the school visit.

Four days to the school visit, the facilitators were tested for COVID19 to ensure the outreach activities are conducted safely and to minimize chances of spreading the COVID19 to students, teachers and school community. All the facilitators were confirmed to be negative for COVID19. In addition, masks and sanitizers were procured for use during the interaction.

Delivery of the rabies laboratory experiment

Ten (10) women scientists drawn from six partnering institutions were involved in the interactive hands-on rabies experiment, role modelling, motivational talks and mentorship sessions carried out at Naivasha girls on 12th June 2021. The list of the 10 scientists who facilitated the outreach are listed in the table below. They included Dr. Esther Kanduma (UoN/KeAWARD), Dr. Catherine Taracha (KARLO/KeAWARD), Ms. Tabby Karanja (KARLO/KeAWARD), Nakami Wilkister (ILRI), Ms. Regina Njeru (ILRI), Ms. Susan Njuguini (National Museums of Kenya/ KeAWARD) Ms. Jackie Kirruti (Kenya Bureau of Standards (KBS)), Ms. Celestine Makokha, KALRO) Ms. Perpetua Wangui (KALRO) and Dr. Immaculate Maina (County Government of Nakuru).



Some of the women facilitators during the interactive laboratory experiment

Name	Institution	Job Designation
1. Dr. Esther Kanduma	University of Nairobi (UoN)	Lecturer/Researcher
2. Dr. Catherine Taracha	KARLO/KeAWARD	Research Scientist
3. Ms. Tabby Karanja	KARLO/ KeAWARD	Research Scientist
4. Nakami Wilkister	ILRI	PhD Fellow
5. Ms. Regina Njeru	ILRI	Lab Manager
6. Ms. Susan Njuguni	National Museums of Kenya/ KeAWARD	Research Scientist
7. Ms. Jackie Kirruti	Kenya Bureau of Standards (KBS)	Quality Assurance Officer
8. Ms. Celestine Makokha	KALRO	Research Scientist
9. Ms. Perpetua Wangui	KALRO	Research Scientist
10. Dr. Immaculate Maina	County Government of Nakuru	County Executive Member in charge of Agriculture

A total of eighty (82) girls between 16-17 years were engaged in two back-to-back 3hr rabies experiment sessions each involving 41 girls. The scientists worked in turns to lead different parts of the experiment while the rest worked with the pupils at their stations. Six teachers participated in the lab sessions.



Students displaying their responses during the session on vaccines

Motivational talks

During the second lab session, the women scientists in turns gave mentorship and career guidance talks to the rest of the 1000 schoolgirls gathered in a school hall. At the end of the day, all the scientists had shared their career journeys and impact stories with the whole school. They also answered questions from the students.

Summary of pupils evaluation and feedback

At the end of the mock experiment, feedback was collected from pupils and teachers. Fifty-one (51) pupils filled the pupil feedback questionnaire while 31 pupils filled the researcher feedback questionnaire which was issued by mistake. Responses were analysed from both questionnaires.

All the pupils engaged were very happy and found the experience to be fun, inspiring, interesting, informative, enjoyable and exciting. Twenty percent (20%) of the girls found the exercise to be thought-provoking and surprising. Their favourite parts of the workshop included pipetting, mixing, testing and analysing the samples, calculating the vaccination rates as well as interacting with the facilitators. All the 51 pupils agreed women can be scientists, reported learning that vaccines are used to prevent animal and human diseases from spreading and that they would tell their families about the experience they had during the workshop. Ninety nine percent (99%) of the girls indicated they could become scientists in future.



Ms. Celestine Makokha, a facilitator from KARLO, answering questions during the 'meet the women scientist' session

Among those who filled the researcher feedback questionnaire, all the 31 pupils reported that the engagement successfully provided an opportunity to develop public engagement skills, improve their confidence and increased their understanding of public engagement and that it was a great opportunity for them to inspire future generations. All the pupils rated the workshop sessions including the organization, resources provided and enjoyment as very good. They indicated they would recommend colleagues to join in the outreach program as well as participate in such outreach programs in future. Close to 95% of the pupils found the interaction great, enjoyable and interesting and would want us to return to mentor more students.

Below are some quoted feedback from the pupils;

"The women who came were young, which has made me know that I can still make it. I was on the verge of giving up, you motivated a soul"

"I would like to do it again; I enjoyed and learnt a lot"

"I am very glad to realise I am a scientist"

"I have grown a deeper passion for science"

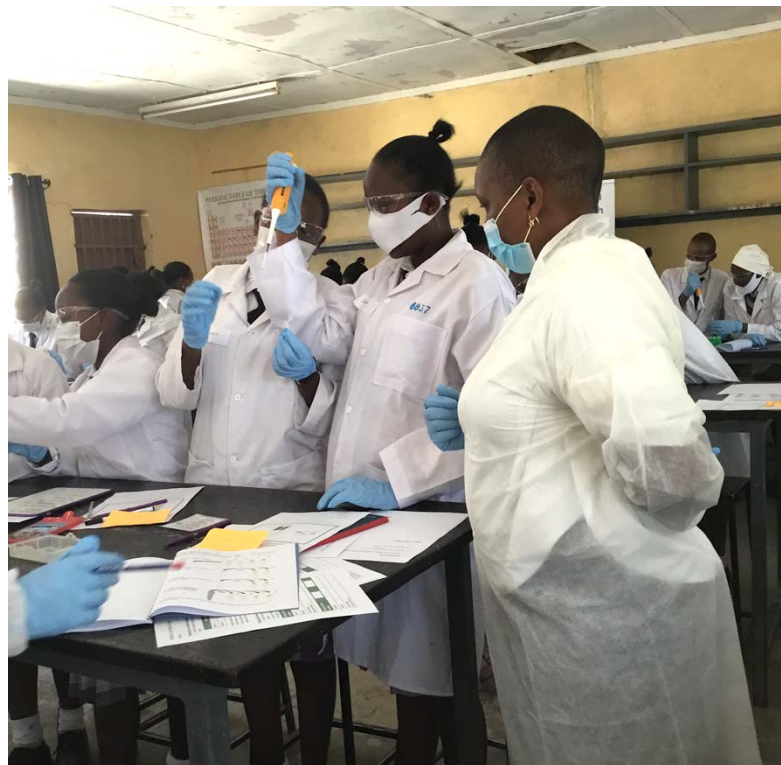
I learnt that science was not for men only or old men but also for me"

"What men can do; the ladies can do better"

"The scientists were awesome, fantastic and proud of their jobs"

"I would like to join you one day and be a living witness of this day 11/06/21"

Two teachers evaluated the lab session and rated the engagement and different aspects of the workshop (the content, structure, pace, equipment, knowledge, approachability and organization of the outreach team ranged between good and very good. They particularly liked group organization and content delivery. The sessions were interactive, and learner centred. The rating of success of the workshop in achieving different parameters such as an opportunity for hands-on practical lab experience, an opportunity for pupils and colleagues to meet and speak with scientists, improving the pupils confidence in



Mrs Catherine Wandeto, Principal, Naivasha Girls assisting students during the mock experiment

experimentation and practical science, increasing and reinforcing understanding of vaccines, jobs in animal science and inspiring pupils to think about science as a career option was rated quite successful. The teachers strongly agreed that the workshop increased the students interest in science, made the students aware of careers in science, increased their motivation to pursue science and provided an opportunity for the girls to realise, science is a career they could pursue. They indicated



Group photo: Students, teachers and the women scientists at the end of the lab sessions

that they would recommend the workshop to other schools and would like to have the outreach team return next year or come again with another workshop.

The new women researchers who supported the outreach activity indicated that they enjoyed being part of the outreach team, would return to be part of another outreach workshop and would recommend to colleagues to join the Outreach Programme.

Tree planting session

At the end of an exciting day, the women scientists, teachers and the students crowned the successful outreach activity with a tree planting session to mark the mentorship visit, promote afforestation and teach the students environmental conservation. These included fruit trees (paw paws, mangoes, avocados, bananas) and other assorted trees.



Tree planting session: Ms. Susan planting a mango tree with the students at the close of the outreach activity

Post-visit Feedback from Naivasha girls

Naivasha Girls School	16 June 2021 at 11:57	NS
APPRECIATION		
To: Esther kanduma		
Dear Dr Esther Kanduma		
This is to sincerely express our appreciation as the fraternity of Naivasha Girls following your outreach programme to our school.		
The exercise was world class. The students cannot stop talking about it.		
We further appreciate that you had to run medical tests for Covid 19 to ensure you were safe to interact with us.		
This is a benchmark. It is the first time we have seen that done for us and it indicates deep concern for our welfare.		
The trees we planted left a mark of your visit. They go along way to sensitize our community on preservation. Thank God the rains have come to complete the work you begun.		
We prayer that each time you organize these programmes we will remain on your list.		
Thank you once again.		
Yours faithfully		
Catherine Wandetto (Ms) SENIOR PRINCIPAL		