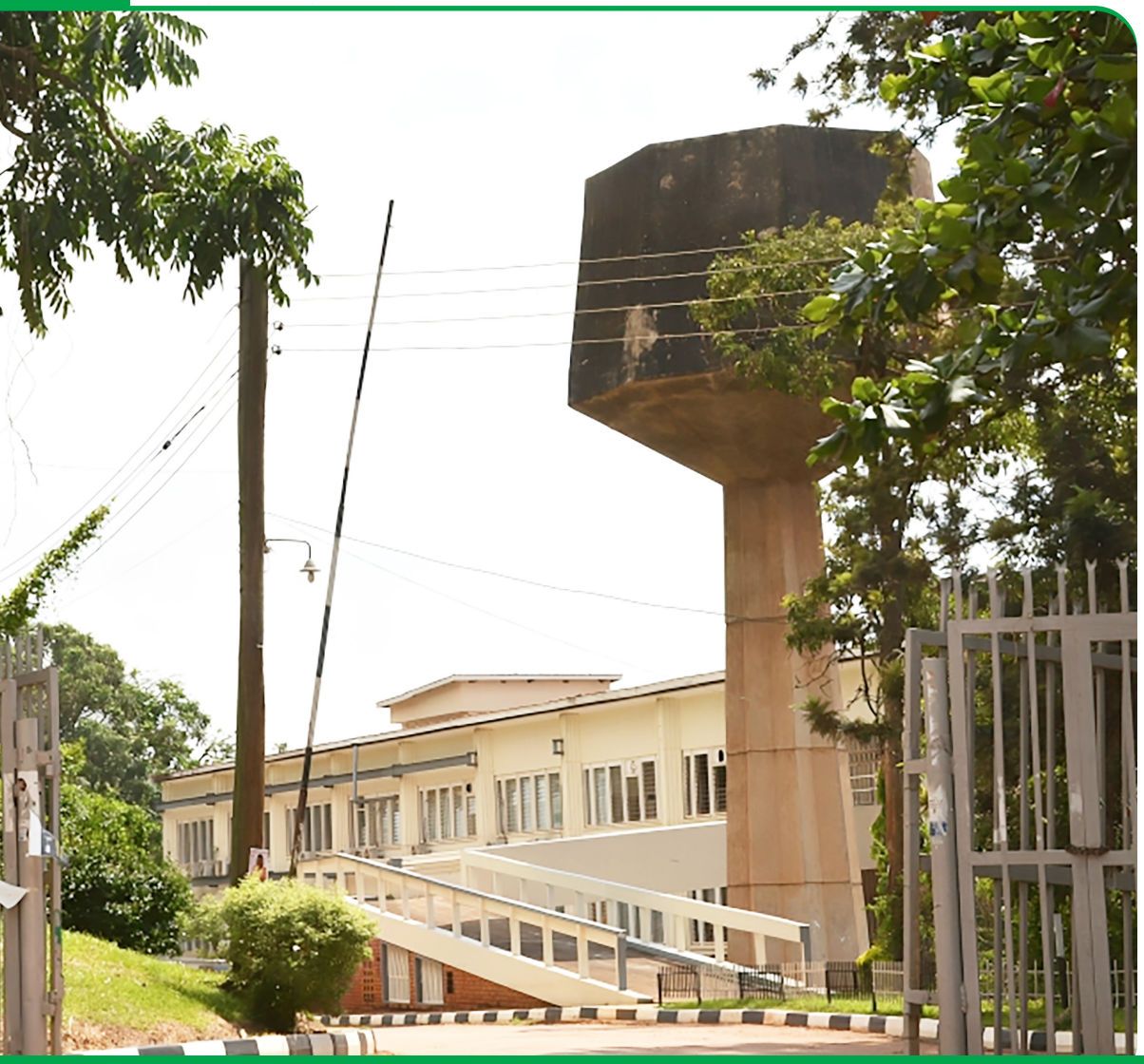
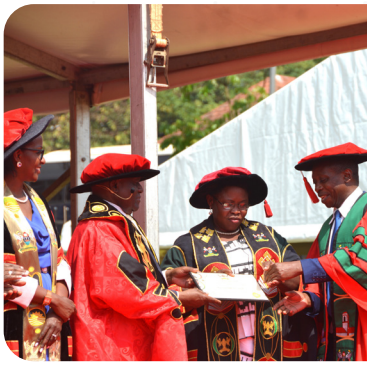
MAKERERE UNIVERSITY

College of Veterinary Medicine, Animal Resources and Biosecurity (CoVAB)





ANNUAL REPORT

2024

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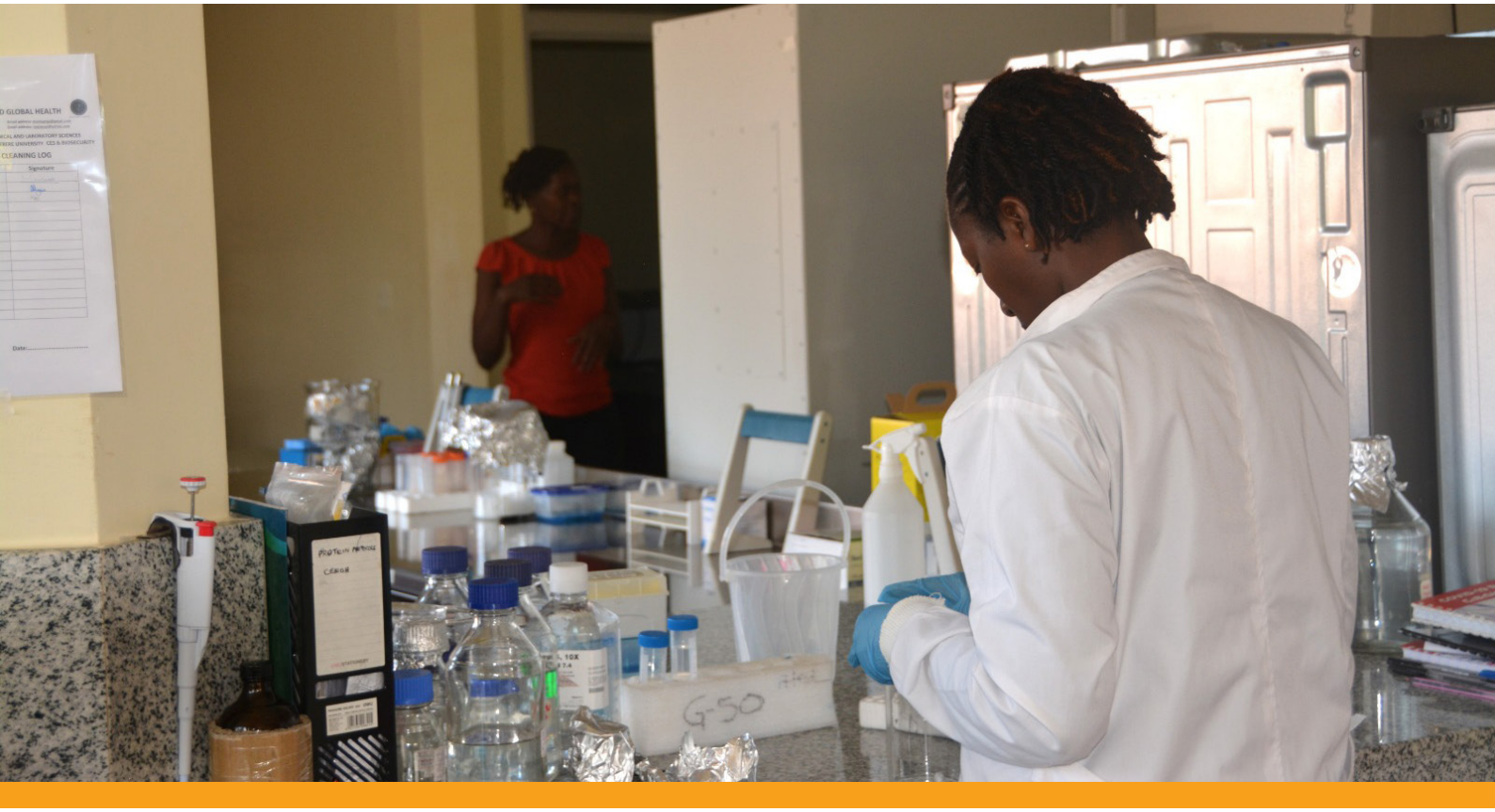

CoVAB LEADERS

Prof. Frank Norbert Mwiine
PRINCIPAL

Assoc. Prof. James Acai-Okwee
DEPUTY PRINCIPAL

DEANS

Prof. Robert Tweyongyere
DEAN, School of Veterinary Medicine and Animal Resources (SVAR)

Dr. Claire M. Mugasa
DEAN, School of Biotechnical and Biolaboratory Sciences (SBLS)

Heads of Departments

Dr. Dorothy Nampanzira
Livestock and Industrial Resources (LIR)

Prof. Savino Biryomumaisho
Veterinary Pharmacy and Clinical Studies (PCS)

Assoc. Prof. Boniface Julius Okuni
Pathobiology (PAB)

Dr. Sarah Nalule
Wildlife and Aquatic Animal Resources (WAAR)

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Dr. Charles Drago Kato
Biomedical Laboratory Technology and Molecular Biology (BLT)

Assoc. Prof. Clovice Kankya
Biosecurity, Ecosystems and Veterinary Public Health (BEP)

Heads of Administrative Units

Richard Byarugaba
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Communication Officer

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Web Administrator

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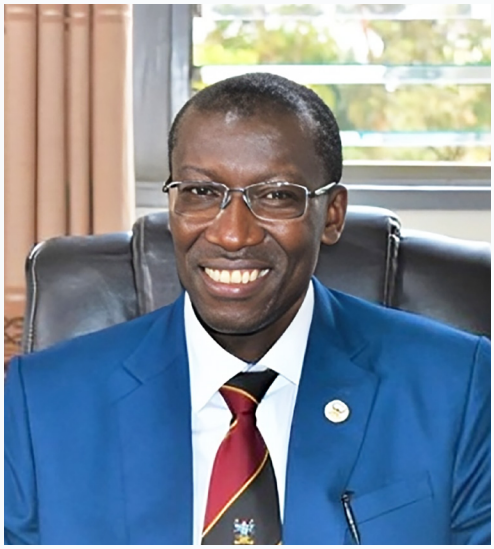


MESSAGE FROM THE PRINCIPAL

It is my pleasure to share the Annual Report for the year 2024, highlighting the various milestones realized in the College of Veterinary Medicine, Animal Resources, and Biosecurity. First and foremost, I wish to congratulate all of us for the dedication and effort rendered in the running of the college during the period. This collective commitment enabled us to excel in several areas, in line with the mandate of the college and Makerere University at large.

Our mandate teaching and learning, research and innovation, as well as knowledge transfer and partnerships, has been diligently pursued through the concerted efforts of all stakeholders, students, teaching staff, administrative teams, and valued partners. The college takes pride in the contributions made by our partners, who continue to support us in fulfilling this mandate. We particularly appreciate Norbrook (U) Ltd, which has consistently recognized the best-performing veterinary students with cash prizes annually since 2021.

Among the key achievements in 2024 was the expansion of research facilities at CoVAB. The college successfully established new, state-of-the-art laboratories, including an advanced Biomarker Discovery and Translation Research Laboratory, which continues to lead in developing point-of-care diagnostic kits for infectious and non-communicable diseases, including cancer. The Biomarker Discovery and Translation Research Laboratory at CoVAB represents a significant leap in biomedical research and innovation. This state-of-the-art facility is dedicated to identifying and translating biomarkers into point-of-care diagnostic kits for both infectious and non-communicable diseases, including cancer. In this regard, CoVAB is poised to make tremendous contributions and impacts in advanced diagnostic development through rapid, accessible, and cost-effective diagnostic tools that can be used in both human and veterinary medicine, thereby contributing to improving early disease detection and treatment outcomes.

In the area of interdisciplinary research, the laboratory fosters collaboration among veterinary scientists, medical researchers, and biotechnologists, ensuring a holistic approach to disease management. Given the increasing prevalence of zoonotic diseases, the lab plays a crucial role in bridging veterinary and human health research,

contributing to global health security and supporting One Health initiatives. Other achievements at the college are visible in groundbreaking research projects, with several initiatives launched, including studies on zoonotic disease prevention, vaccine development, and drug action mechanisms.

In the area of community outreach, the college expanded its livestock health programs, providing veterinary services to rural communities and enhancing disease surveillance. This is coupled with the increased international Collaborations where CoVAB strengthened partnerships with global institutions, securing funding for One Health initiatives aimed at tackling emerging health challenges.

These advancements and more not mentioned strategically position COVAB and Makerere University as key players in addressing major animal and human health challenges, particularly zoonotic diseases, which constitute a significant proportion of emerging and reemerging infectious diseases.

The achievements highlighted in this report would not have been possible without the unwavering support, dedication, and collaboration of various stakeholders. We extend our heartfelt gratitude to our students, who are the backbone of our academic community, and whose commitment to learning, research, and innovation continues to propel CoVAB to greater heights. The dedication of our lecturers, researchers, and administrators has been instrumental in driving the college's mandate forward. Your passion for education, mentorship, and scientific discovery is deeply appreciated. The partners and collaborators, including institutions, organizations, and industry stakeholders such as Norbrook (U) Ltd, have supported our initiatives and strengthened our capacity through funding, knowledge exchange, and collaborative projects. Your contributions are invaluable.

Together, these contributions have made 2024 a truly remarkable year for CoVAB. As we move forward, we remain committed to strengthening these partnerships and building on our shared successes. Thank you for being part of our journey. As we move forward, we anticipate an even more successful period ahead, and together, we shall achieve all that we set out to do.

Prof. Frank Norbert Mwiine
PRINCIPAL

1 INTRODUCTION & BACKGROUND

The College of Veterinary Medicine, Animal Resources and Biosecurity (CoVAB) has had a profound impact on veterinary education and research in Uganda, serving as a pillar in shaping professionals who drive animal health, food security, and public health. Since its transformation into a constituent college of Makerere University, it has expanded its academic programs, research initiatives, and collaborations with national and international institutions. The College has made significant contributions in varied aspects. In Veterinary Education and Training, the College offers undergraduate and postgraduate programs in veterinary medicine, animal production, and biosecurity. It equips students with practical skills through hands-on training, field research, and laboratory work. In the field of Research and Innovation, CoVAB has been at the forefront of veterinary research, tackling issues such as zoonotic diseases, livestock productivity, and sustainable animal health practices. It plays a vital role in developing vaccines, disease management strategies, and improved breeding techniques. Also worth mentioning is the area of Biosecurity and Public Health, where the college has taken on an active role through education. With the country's focus on disease prevention and food safety, CoVAB has taken an active role in biosecurity education. It has intensified efforts towards controlling disease outbreaks, improving veterinary surveillance, and advising policymakers on animal health regulations. This has been realized through Community Outreaches working directly with farmers, veterinary practitioners, and policymakers to promote best practices in animal health and sustainable farming. Through outreach programs, CoVAB supports rural communities with veterinary services and technical advice. All these efforts have been made possible through the deliberate efforts towards strengthening collaborations and partnerships with local and international organizations, research institutions, and government bodies to advance veterinary science in Uganda. These collaborations help secure funding, improve research infrastructure, and facilitate knowledge exchange. It is worth noting that the college has and continues to make tremendous contributions in shaping Uganda's veterinary and agricultural sectors, helping to improve livestock productivity, safeguard food security, and protect both human and animal health. Since its establishment to date, the college is reflecting the growing significance of veterinary science, animal health, and biosecurity in both academic and national development contexts.

1.1. Mission Statement

To provide transformative, innovative, teaching, learning, research and outreach services responsive to the dynamic national, regional and global needs

1.2. Strategic Objectives

CoVAB has strategic objectives aimed at transforming challenges in the animal resources sector into economic and livelihood opportunities. Some of its key goals include:

- **Enhancing Biosecurity:** CoVAB is committed to advancing biosecurity measures, recognizing the role of animal resources in harboring germs that can impact global health, security, and economies.
- **Driving Innovation and Research:** The College focuses on applied research and innovation to improve veterinary medicine, biosecurity, and animal resource management.
- **Capacity Building and Education:** CoVAB aims to nurture skilled professionals who are entrepreneurial and capable of creating jobs in the veterinary and animal resource sectors.
- **Strengthening Partnerships:** The institution collaborates with various stakeholders, including government agencies and international research organizations, to enhance knowledge transfer and development.

1.3. Core values

The College is guided by the core values as stated in the University's strategic plan, namely;

- Accountability
- Professionalism
- Inclusivity
- Integrity
- Respect

1.4. Schools, Departments and Centres

CoVAB is structured into two key schools, each specializing in different aspects of veterinary and biotechnical sciences:

1.4.1 The School of Veterinary Medicine & Animal Resources (SVAR)

This school is dedicated to advancing veterinary medicine, animal health, and livestock management. It plays a crucial role in the research and development of disease prevention, animal breeding, and sustainable livestock farming. SVAR contributes to national food security by enhancing animal productivity and health.

The Departments under SVAR are;

- Livestock and Industrial Resources (LIR)
- Veterinary Pharmacy, Clinical and Comparative Medicine
- Wildlife and Aquatic Animal Resources (WAAR)

1.4.2 Biosecurity, Biotechnical and Laboratory Sciences (SBLS)

This school, SBLS, is dedicated to biotechnology, biosecurity, and laboratory sciences. The school conducts training and groundbreaking research in disease management; diagnostics and prevention including vaccinology. Through edge-cutting technology and innovative tools the school supports Uganda's biosecurity efforts by providing expertise in zoonotic disease management, pharmaceutical research, and environmental health monitoring. SBLS enhances scientific innovation in molecular biology and genetics, contributing to medical and agricultural advancements.

The Departments under SBLS are;

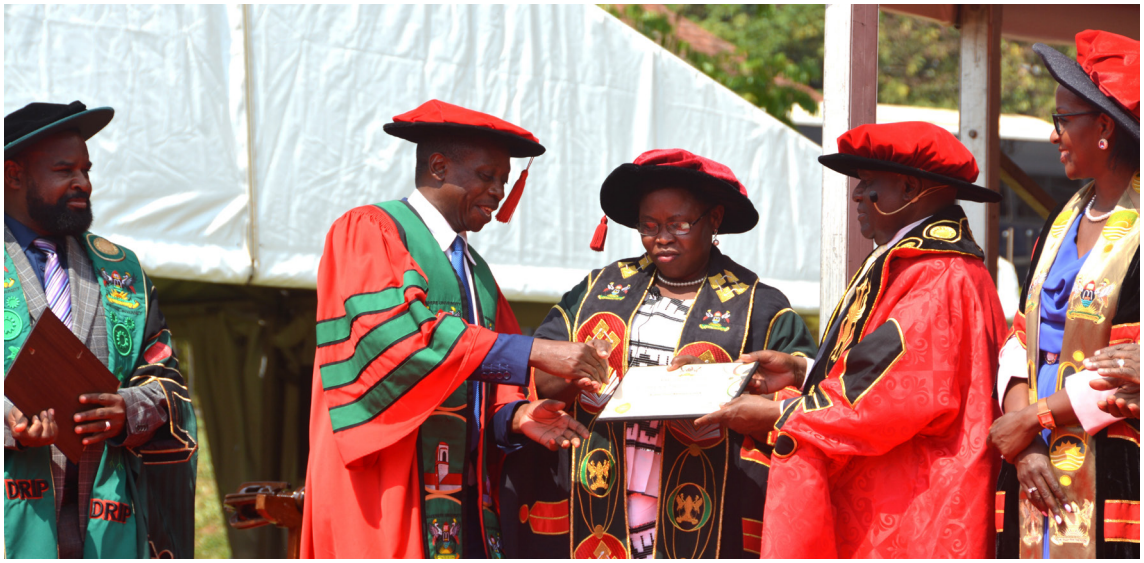
- Biomolecular Resources and Bio lab (BBS)
- Biosecurity, Ecosystems and Veterinary Public Health (BEP)
- Biotechnical and Diagnostic Sciences (BDS).

1.4.3. Institute and Research Centres

CoVAB has one (1) Institute and seven (7) centers. The table below shows the centers and their areas of focus

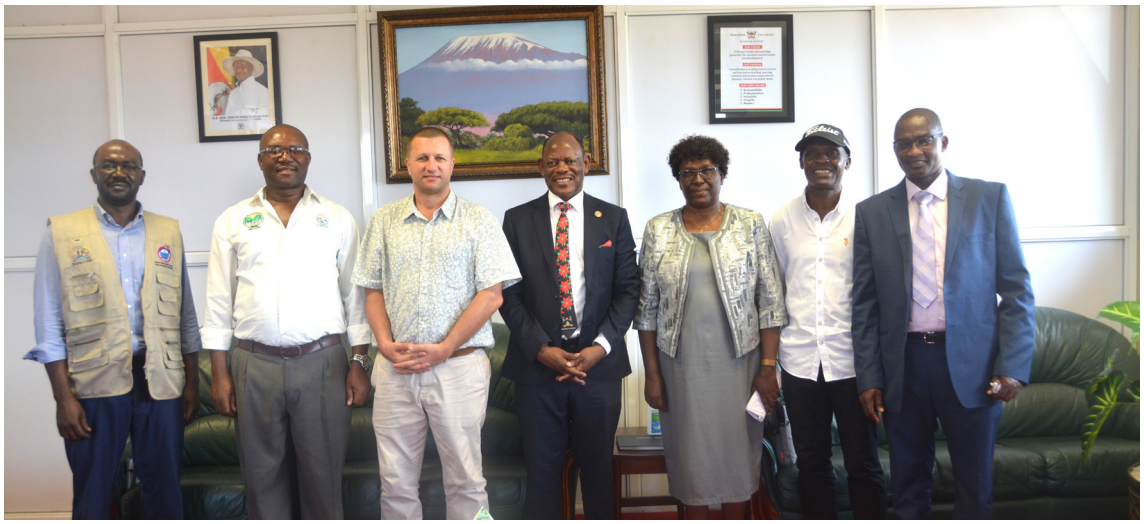
Table 1: Institute and Research Centres in CoVAB.

No.	Name of Institute/Centre	Area of focus	Target Group
1	Africa Institute for strategic Resource services and development (AFRISA)	Comprehensive industrial value chain, Education and cottage enterprises development	Academia, Community Public Private Partnerships
2	Ruth Keesling wildlife health Extension, research and Education	Strategic wildlife innovations	Wildlife community
3	Centre for Biosecurity, and Global Health (CEBIGH).	Bio-risks and bio-threats	Research Community
4	Joint National Animal Diagnostics Centre(J-NADIC)	Diagnostic Extension Services. Ticks and tick-borne diseases	Farmers Community private sector Learners Researchers
5	Walter Reed Project Laboratories for Emerging Infectious Diseases	Avian Influenza	Community Researchers
6	Nakyesasa Incubation Centre for Industrial Livestock Research and Business Innovations, Wakiso District	Industrial Livestock	Community Farmers Researchers
7	Buyana Stock Farm, Mpigi District	Field Practical Teaching and Learning	Farmers Learners Researchers
8	Ngoma Anti-Tick Vaccine Clinical Trial site, Nakaseke District	Anti-Tick Vaccine Clinical trial site	Researchers
9	Tropical Diseases and Vector Control Laboratory	Ticks and Tick-Borne Diseases Control Genomics & Vaccine Research Antimicrobial and anthelmintic resistance monitoring and action Neglected animal diseases and zoonoses control Pharmaceutical Research and Clinical Trials Pollinator Protections and Insect Research	Farmers Learners Researchers



Dr. Enoch Matovu received his recognition award during the graduation ceremony.

Dr. Lawrence Mugisha received his certificate of recognition



AU-IBAR delegation engages Makerere University leadership to strengthen regional animal health initiatives.

TEACHING AND LEARNING ACHIEVEMENTS

2

The College of Veterinary Medicine, Animal Resources, and Biosecurity (CoVAB) provides a dynamic teaching environment, offering on-demand programs tailored to both national and international learners across its two schools. Equipped with modern laboratories, the college fosters research, innovation, and hands-on practical learning, ensuring students gain the essential skills needed for advancements in veterinary medicine, animal health, and biotechnology. With its robust infrastructure and commitment to excellence, CoVAB plays a pivotal role in driving Uganda's veterinary and biosecurity sectors forward.

2.1. Programs offered at CoVAB

Across the two Schools, the college runs several programs in tandem with the institution's main mandate, which is teaching and learning. As indicated in the tables below, the programs range from Ordinary diplomas, Bachelor's degrees, to Master's Degrees, postgraduate diplomas, and Ph.D.s. **Ordinary Diplomas** are intended for students seeking practical skills in veterinary and animal sciences. The **Bachelor's Degrees** are comprehensive undergraduate studies preparing students for careers in veterinary medicine, animal production, and biosecurity. The **Postgraduate Diplomas** offer advanced specialization programs for professionals aiming to deepen their expertise. The **Master's Degrees** that cut across all programs are focused on research and advanced training in various veterinary and biosecurity disciplines, while the **Ph.D. Programs** are Doctoral-level research contributing to new knowledge and innovations in the field. These programs equip graduates with the skills needed for careers in veterinary practice, research, academia, and policy development, ensuring CoVAB continues to play a pivotal role in Uganda's agricultural and health sectors.

Masters students jubilate during their graduation on Wednesday January 31st, 2024.

Table 1. Programs offered at COVAB

Department of Biosecurity Ecosystems and Veterinary Public Health (BEP)	
	Bachelor of Laboratory Science Education and Industry (BLSE)
	Masters of Veterinary Preventive Medicine (MVPM)
	Master of Science in Global Biosecurity International Infectious Diseases Management (MBDM)
	Doctor of Philosophy (Biosecurity) (PSBL)
Department of Biotechnical and Diagnostic Sciences (BDS)	
	Bachelor of Biomedical Laboratory Technology (BBLT)
Dept. of Biomolecular Resources and Biolab Sciences (BBS)	
	Master of Biomedical Laboratory Sciences and Management (MSBL)
	Master of Biomedical Laboratory Sciences and Management (MSBL)
	Master of Science in Molecular Biology (MSBS)
	Bachelor of Biomedical Laboratory Technology (BBLT)
Dept. of Livestock and Animal Resources (LIR)	
	Bachelor of Industrial Livestock and Business (BILB)
	Bachelor of Animal Production Technology and Management (BAPT)
	Master of Science in Livestock Development & Management (Livestock Sector Planning and Management (MSLS)
	Postgraduate Diploma in Livestock Development Planning and Management (GLPM)
Dept. of Wildlife and Aquatic Animal Resources (WAAR)	
	Bachelor of Science in Wildlife Health and Management (BWHM)
	Master of Science in Wildlife Health and Management. (WHM)
Department of Veterinary Pharmacy, Clinical and Comparative Medicine (PCM)	
	Bachelor of Veterinary Medicine (BVET)
	MSC. Veterinary Pathology (MVPA)
	Master of Veterinary Medicine) Food, Animal Health and Production) (MVMF)
	Doctor of Philosophy (School of Veterinary Medicine and Animal Resources (PSVM)
	Master of Veterinary Medicine (Food Animal Health and Production (MVMF)

2023/2024 student enrolment as of December 2024

BVM	Male	Female	Total
Year 1	25	14	39
Year 2	15	12	27
Year 3	37	9	46
Year 4	33	23	56
Year 5	29	21	50
Total	139	79	218

BBLT	Male	Female	Total
Year 1	42	22	64
Year 2	54	20	74
Year 3	79	15	94
Total	175	57	**232**

BAPT	Male	Female	Total
Year 1	17	6	23
Year 2	7	16	23
Year 3	17	8	25
Total	41	30	71

BILB	Male	Female	Total
Year 1	23	12	35
Year 2	20	15	35
Year 3	11	0	11
Total	54	27	81

MVM I	Male	Female	Total
Farm	1	1	2
Comparative	0	1	1
Companion	0	0	0
Governance	0	2	2
Pharmaceutical	6	2	8
Total	7	6	13

MVM II	Male	Female	Total
Farm	0	1	1
Comparative	1	1	2
Comparative	1	0	1
Governance	1	1	2
Pharmaceutical	1	0	1
Total	**4**	**3**	**7**

MSBS	Male	Female	Total
1	28	8	36
2	8	10	18
Total	**36**	**18**	**54**
MVPM	**Male**	**Female**	**Total**
1	5	1	6
2	4	1	5
Total	**9**	**2**	**11**

MSLS	Male	Female	Total
1	10	4	14
2	0	1	1
Total	**10**	**5**	**15**

MSLD	Male	Female	Total
1	15	6	21
2	1	0	1
Total	**16**	**6**	**22**

MBDM	Male	Female	Total
1	9	16	25
2	0	0	0
Total	**9**	**16**	**25**

MWHM	Male	Female	Total
1	3	2	5
2	2	0	2
Total	**5**	**2**	**7**

PGD	Male	Female	Total
1	3	0	3

PhD	Male	Female	Total
1	3	1	4
2	0	1	1
3	2	2	4
4	0	1	1
Total	**5**	**5**	**10**

Total Postgraduate Diploma		
Male	**Female**	**Total**
3	0	3

Total PhD		
Male	**Female**	**Total**
5	5	10

	Summary		
	Male	**Female**	**Total**
Bachelor	409	193	602
Masters	96	58	154
PGD	3	0	3
PhD	5	5	10
Total	**513**	**256**	**769**

Key	
BVM	Bachelor of Veterinary Medicine
BAPT	Bachelor of Animal Production Technology and Management
BILB	Bachelor of Industrial Livestock Business
BBLT	Bachelor of Biomedical Laboratory Technology
MSLS	Master of Biomedical Laboratory Sciences And Management
MSBS	Master of Science In Molecular Biology
MSLD	Master of Science In Livestock Development & Management (Livestock Sector Planning &Management)
MVPM	Master of Veterinary Preventive Medicine

MWHM	Master of Science in Wildlife Health & Management (Wildlife Resource Management)
PGD	Postgraduate Diploma in Livestock Development Planning and Management
Farm	Master of Veterinary Medicine (Farm Animal Practice and Herd Health)
Comparative	Master of Veterinary Medicine (Comparative Pathology and Clinical Diagnostics)
Companion	Master of Veterinary Medicine (Companion and Recreation Animal Practice)
Governance	Master of Veterinary Medicine (Governance and Administration of Public Veterinary Services)
Pharmaceutical	Master of Veterinary Medicine (Pharmaceutical Practice and Regulation)
MBDM	Master of Science in Global Biosecurity and Infectious Diseases Management
PhD	Doctor of Philosophy

2.2. The 74th Graduation Statistics

CoVAB presented several graduands that included 7 Ph.D.s, 58 with Master's Degrees, 212 Bachelor's Degrees, and 5 with Postgraduate Diplomas. The PhD Graduands included some staff, and they were with, namely Agutu Claire, Atim Stella, Driciru Margaret, Kizza Daniel, Mayanja Martin Nsubuga, and Othieno Emmanuel.

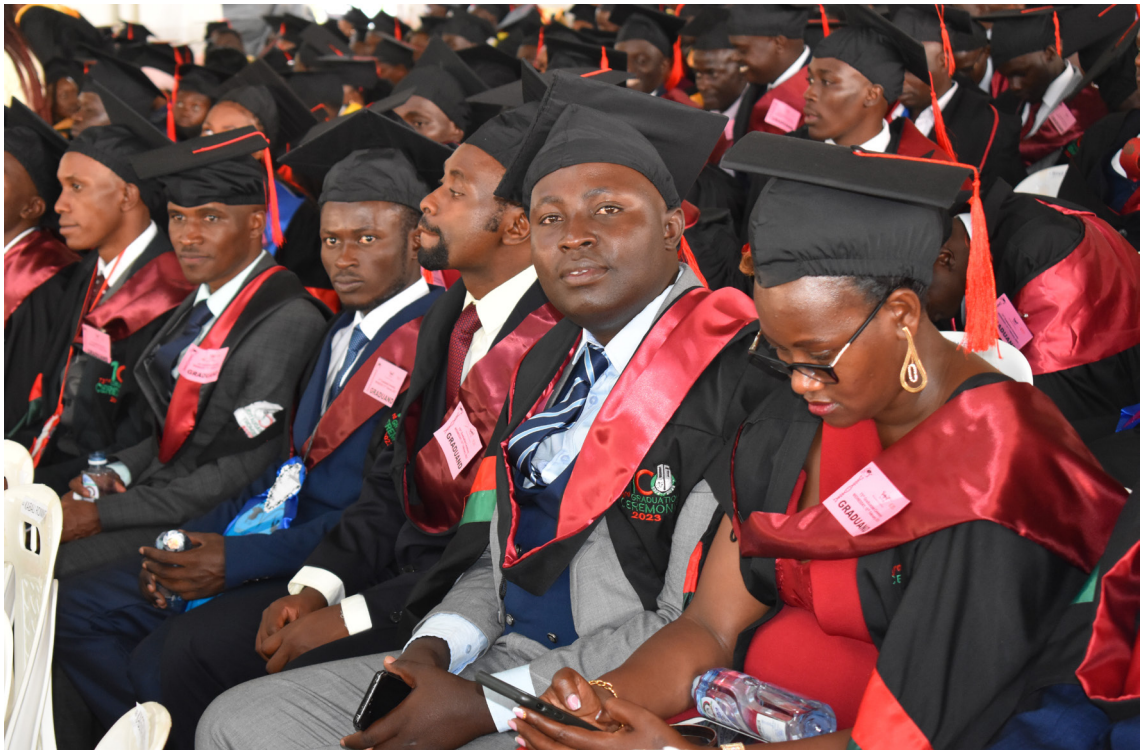
Table 5. COVAB's 74th Graduation Statistics

The table below shows the graduation statistics for students in the college who were presented at the 74th Graduation ceremony.

Table for post graduate degree

Postgraduate degrees	Female	Male	Total
Masters Programs			
Master of Science in Molecular Biology	5	7	12
Master of Biomedical Laboratory Sciences and Management	5	2	7
Master of Science in Livestock Development and Management	1	5	6
Master of Veterinary Preventive Medicine	3	7	10
Master of Science in Global Biosecurity and Infectious Diseases Management	8	8	16

Postgraduate Diploma			
Postgraduate Diploma in Livestock Development Planning and Management	0	5	5
Undergraduate Degree Programs			
Bachelor of Veterinary Medicine	8	58	66
Bachelor of Animal Production Technology and Management	5	13	18
Bachelor of Biomedical Laboratory Technology	43	64	107
Bachelor of Industrial Livestock and Business	5	11	16
Bachelor of Wildlife Health and Management	1	3	4



A section of students at the graduation ceremony

2.3. CoVAB Researchers recognized during graduation

Five of the best researchers from the College of Veterinary Medicine, Animal Resources and Biosecurity (CoVAB) were recognized during the 74th graduation ceremony for their outstanding contribution to the body of knowledge. They included Dr. Enock Matovu with 48 publications, Dr. Eddy Wampande with 37, Prof. Denis K. Byarugaba with 36, Dr. Kato Drago with 33, and Prof. Frank Nobert Mwiine who is also the Principal CoVAB, with 30. These were some of the beneficiaries of the inaugural Vice Chancellor's Research Excellence Awards given to all Colleges and the University Library. During day 3 of the 74th graduation ceremony on Wednesday, 31st January 2024 when CoVAB presented her students, Prof. Barnabas Nawangwe noted that with support from various partnerships,

the University's research output in terms of innovations and publications had increased. He said the recognition of outstanding performers in research and publication was based on the highest number of publications between the year 2017 and 2023 according to the Scopus database. He urged all staff to continue conducting research on national development priorities as well as matters of global interest and publishing their work in high-impact journals so as contribute to the university's drive to become research-led.

2.4. Excelling Bachelor of Veterinary Medicine Students Awarded

Makerere University, in partnership with Norbrook (U) Ltd, continues to recognize outstanding veterinary students through the prestigious **Veterinary Excellence Awards**. Since 2021, Norbrook (U) Ltd has awarded top-performing graduates with cash prizes totalling over **Fifteen Million Shillings**, reinforcing the institution's commitment to academic achievement and professional excellence in veterinary medicine. During the **74th Graduation Ceremony**, three exceptional graduates were honored for their academic success. They were **Kawuma Denis** with a CGPA of **4.36, Kyomukama Baker Raymond** – CGPA **4.25, and Atutambire Jonathan, who scored a** CGPA of **4.17.** The awards, initially launched as part of the golden jubilee celebration of veterinary education in Uganda, have become a tradition, encouraging excellence and inspiring future veterinary professionals. The University Management, CoVAB leadership, and Norbrook (U) Ltd extended their heartfelt congratulations to the beneficiaries, emphasizing the importance of rewarding academic excellence and fostering a new generation of veterinary leaders.

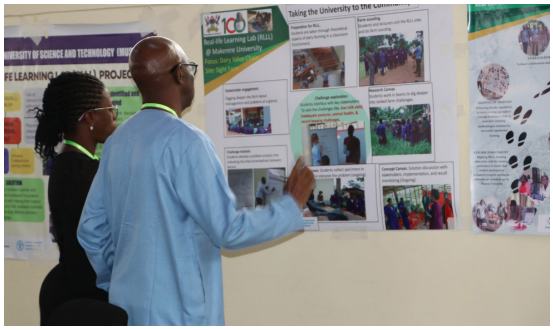
2.5. Career Guidance Session for CoVAB Finalists

On April 5, 2024, the College of Veterinary Medicine, Animal Resources, and Biosecurity (CoVAB) conducted a career guidance session aimed at equipping final-year students with essential skills for the job market. The session brought together experienced academicians and industry professionals to provide insights on CV writing, interview techniques, career prospects, and entrepreneurial opportunities. The facilitators included esteemed members of the Livestock and Industrial Resources (LIR) Department, among them Professor Anthony Mugisha, Dr. Kizza Daniel, Dr. Herbert Mukiibi, and Dr. Dorothy Nampanzira, alongside industry representative Mr. Kibirige Ponsiano, Chairperson of the Animal Production Society of Uganda (APSU). Dr. Nampanzira urged students to take ownership of their professional journeys, stressing the importance of mentorship and proactive learning. Meanwhile, Dr. Kizza guided attendees on best practices for structuring a CV, highlighting common pitfalls that could hinder employment opportunities. While encouraging an entrepreneurial mindset, Dr. Mukiibi emphasized problem identification as a route to success, advising students to view challenges as business opportunities rather than solely seeking formal employment. The Industry expert Mr. Ponsiano discussed the professional recognition of animal production specialists, urging graduates to pursue further education and integrate themselves into the field by addressing farmers' challenges. Prof. Mugisha concluded the session with a call for a mindset shift, distinguishing between learning and education while highlighting the expansive opportunities within the animal value chain. This first-of-its-kind event at CoVAB provided students with valuable insights as they prepare to enter the workforce, ensuring they are equipped

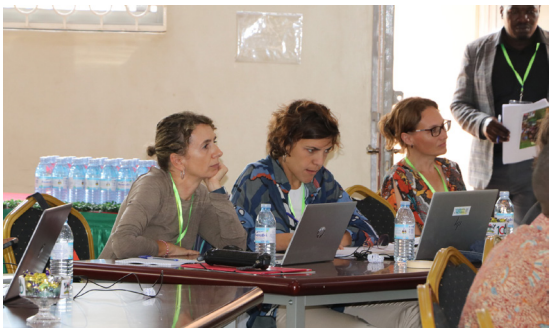
not only with technical knowledge but also the confidence to navigate career challenges successfully.

2.6. Training of Trainers workshop for the Collaborative Online International Learning (COIL) model

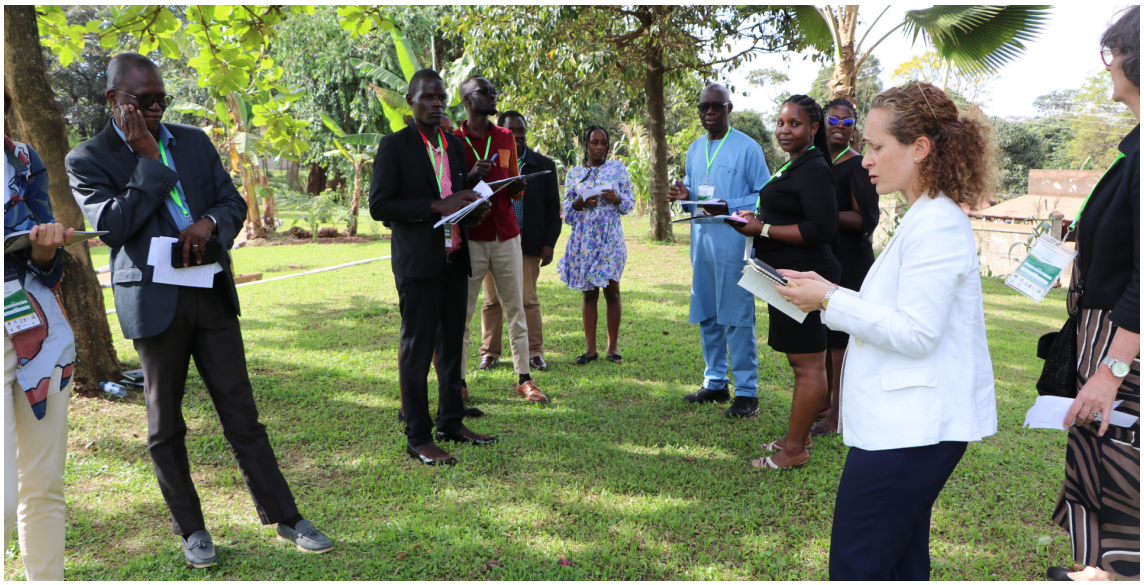
On October 14, 2024, the College of Veterinary Medicine, Animal Resources and Biosecurity (COVAB) convened a five-day Training of Trainers workshop for the Collaborative Online International Learning (COIL) model. This was part of the Innovation for Sustainability and Societal Relevance (INSSPIRE) project, which focuses on enhancing evidence-based education in food systems and climate change. The workshop brought together partners and stakeholders from various higher education institutions across Southern and Northern Africa to brainstorm innovative strategies for addressing these pressing global challenges. Stakeholders demonstrated their progress in implementing Real Life Learning Labs (RLLL), an experiential learning approach designed to foster interdisciplinary collaboration on real-world development projects. These labs aim to tackle relevant issues in agriculture, industry, and society by equipping students with practical skills and problem-solving capabilities.



Some of the participants in the workshop have a look at one of the posters spelling out the activities of Real-Life Learning Labs



Training of Trainers workshop for the Collaborative Online International Learning (COIL) model



Training of Trainers workshop for the Collaborative Online International Learning (COIL) model

2.7. Mentorship Initiatives for Emerging Conservation Leaders

Dr. Sente Celsus has spearheaded impactful mentorship programs to nurture the next generation of conservation professionals, supporting students and advancing wildlife health initiatives. As part of his efforts, Dr. Celsus facilitated the enrollment and mentorship of two Makerere University students, Mary Akumu and Steve Ssemanobe, into the William & Mary College (W&M) and Conservation through Public Health (CTPH) internship and career program. Through this program, students gained hands-on experience in conservation, public health, and sustainable environmental practices, shaping their careers in One Health and biodiversity protection. Additionally, Dr. Celsus played a key role in a collaborative application involving the Zoological Society of London, CTPH, and support from the U.S. Fish and Wildlife Service (USFWS) to launch Africa's first-ever One Health Ape Mentor Program. This initiative aims to enhance primate conservation efforts by equipping young professionals with field expertise, mentorship, and leadership training.

2.8 Dr. Joelia Nasaka's Leadership supports the nurturing of students

In 2024, Dr. Joelia Nasaka was elected President of the Association of Uganda-Germany Alumni (AUGA) for the 2024-2026 term. In her leadership role, she is set to strengthen academic collaborations between Uganda and Germany, fostering connections among alumni who have benefited from German education and professional training. Dr. Nasaka coordinates with the German Academic Exchange Service (DAAD), the key funding body supporting educational programs and scholarships. Additionally, she serves as a member of the selection committee for the DAAD Nairobi Regional Office's scholarship program for East Africa, helping to identify and support outstanding students pursuing higher education opportunities in Germany.

As a trained and certified youth counselor, Dr. Joelia Nasaka plays a key role in mentoring and guiding university students at CoVAB, serving as the official contact person in the Emerging Leaders' Program, a national initiative led by the Ministry of Education and Sports. This program is designed to nurture students' character and moral development, addressing critical societal challenges such as corruption and moral decay. Through her mentorship, Dr. Nasaka continued to encourage young minds to embrace ethical leadership, integrity, and accountability, ensuring they are equipped to become future changemakers.

2.9. LIR orientation of freshers

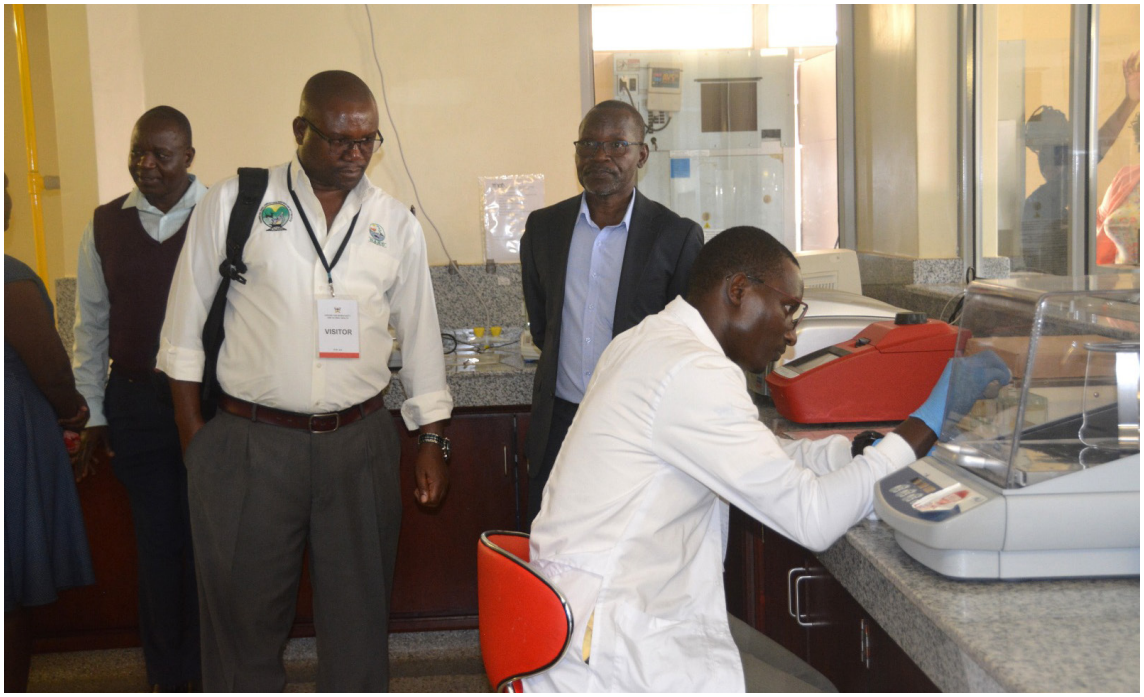
The Department of Livestock and Industrial Resources (LIR) in the School of Veterinary Medicine and Animal Resources (SVAR) at the College of Veterinary Medicine, Animal Resources and Biosecurity (CoVAB) demonstrated and commitment towards ensuring that the new students get the best experience and gain the needed skills for the competitive world of work during an orientation event.

Dr. Dorothy Nampanzira, HoD, Livestock, and Industrial Resources, COVAB addressed students

Dr. Dorothy Nampanzira, the Head of Department LIR and other staff in the unit addressed freshers and committed themselves to give them their best. The programs offered under the LIR department are Bachelor of Animal Production Technology & Management Technology (BAPT), Bachelor of Livestock Industrial Business (BILB), and MSc. Livestock Development, Planning & Management. The students, many of whom had not made the programs they were admitted to as their number one choice were informed of the relevance of the courses as evidenced from the reviews , making them essential in addressing the prevailing needs of the country. They were assured of having a successful career once they got focused and grabbed the opportunity wholesomely.

Staff and students in LIR Department after an orientation meeting

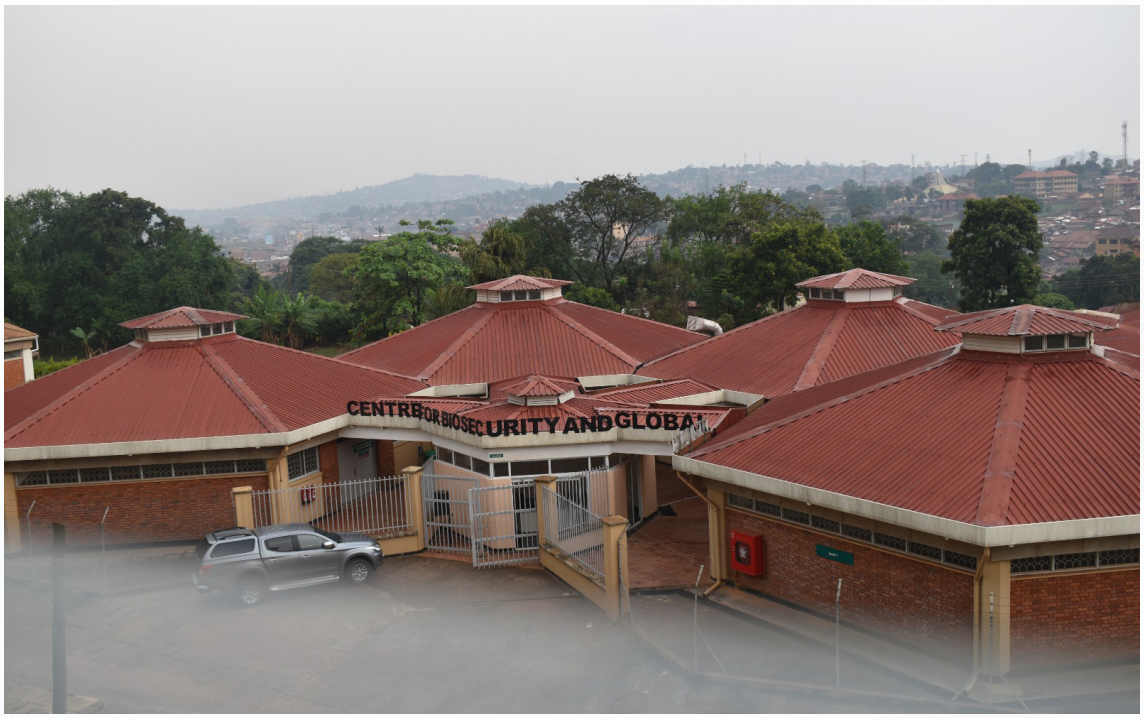
The orientation covered areas like detailed explanations of the programs offered in the department which focuses on improving farm production and value addition of livestock products and wildlife resources, through teaching and learning, research, outreaches, internships, and peer-to-peer learning exposures. It also covered the teaching and learning methods including lectures, practicals, group discussions, illustrations, seminars, and online blended learning. The students were encouraged to appreciate the learning outputs and learn the aspect of self-study given the wide range of readily available information. Students were urged to develop research skills early enough by getting curious, gaining abilities of perseverance, becoming critical thinkers, and learning to collaborate with colleagues and students.



A PhD student in the lab

RESEARCH AND INNOVATION

3



The Centre for Biosecurity and Global Health (CeBiGH), with support from the Government of Uganda, upgraded labs to Biosafety Level 2 and 3 for advanced pathogen research.

3.1. Ongoing Research projects

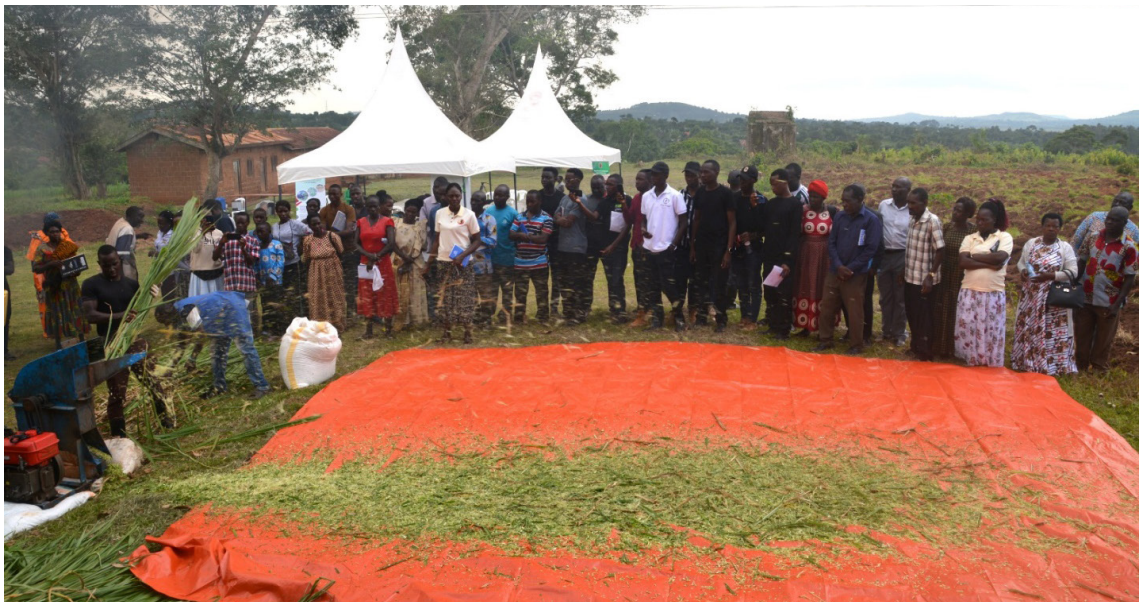
- MAD-tech-AMR-Management of Animal Diseases and antimicrobial use by Information and Communication Technology to Control AMR in East Africa.
- A Cross-Disciplinary Alliance to Identify, PREdict and prePARe for Emerging Vector-Borne Diseases (PREPARE4VBDs).
- Establishment of a Biomarker research facility to first track the development of COVID19 novel diagnostics and treatment alternatives in Uganda.
- Subunit Vaccine Project
- Surveillance ELISA Project
- Strengthening Surveillance of Leishmaniasis in Uganda and Kenya through a Collaborative Multisectoral One Health Capacity Building Approach in Endemic foci.

- Innovation for Sustainability and Societal relevance: Partnerships in evidence-based higher Education on food systems and climate change.
- Controlling and progressively minimizing the burden of Animal trypanosomosis.
- The consequences of biodiversity loss and land use change on infectious disease emergence.
- The role of Warthogs in the epidemiology of African swine fever in Uganda.
- Monitoring of Ticks and Acaricide Resistance Laboratory Network (MorTAR)
- Establishment of Cyber Biosecurity Inventory and Procedures for Effective Safety and Administrative Controls for COVAB and UVRI Laboratories in Uganda
- The Africa One Health Network for Disease Prevention (ADAPT) aims to address antimicrobial resistance (AMR) and neglected tropical diseases (NTDs) in Sub-Saharan Africa. Supported by the European Commission, the five-year initiative involves seven Sub-Saharan countries, including Uganda, with Makerere University as a key participant. The project focuses on screening AMR, investigating helminthic infection and drug-resistant bacteria, developing diagnostics, and building local capacity for managing AMR and NTDs. It adopts a One Health Approach, involving various stakeholders to develop antimicrobial stewardship in the region.
- Prof. Nizeyi JB, in partnership with the Ministry of Tourism, Wildlife, and Antiquities, received a $45,000 grant from COMMCEC. This grant will fund training for heritage tourism participants in "Effective Management of Tourism Heritage Sites for Enhancing Quality and Sustainability in Tourism." The project is set to be executed in March 2025.
- The Africa One Health Network for disease prevention (ADAPT) project aimed at building the capacity of improved, sustainable, and locally–led management of antimicrobial resistance (AMR) and Neglected Tropical Diseases (NTDs).
- CoVAB awarded scientific equipment worth 400,000 USD (Shs. 1.6 billion) under the Seeding Labs' Instrumental Access Program, under a US-based NGO working to increase access to resources for science in developing countries. The state-of-the-art equipment to be used for teaching, research, and diagnostic services.
- Research Funding and Lab Establishment: Dr. Kato Charles Drago, a CARTA graduate from CoVAB, secured over $5 million in research funding and established a biosafety level 2 lab for studying zoonotic diseases.

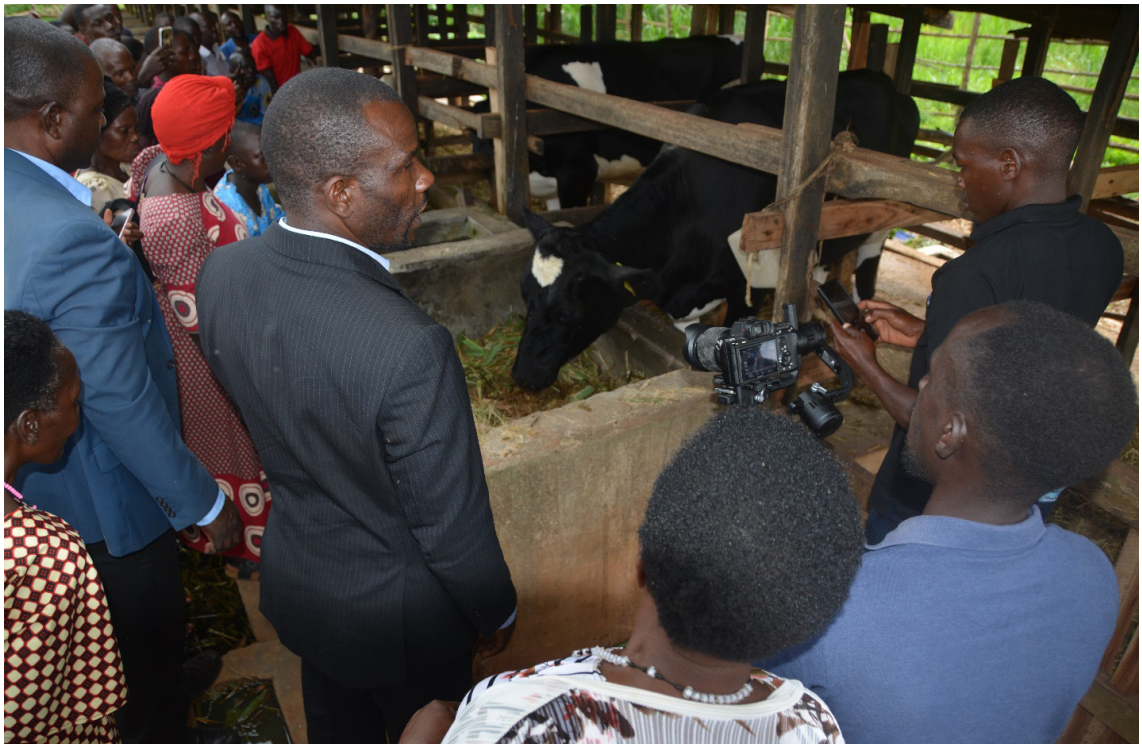
3.2 Climate-Smart Agriculture

On 20th November 2024, scientists and students from Makerere University held a field school event at Our Lady of Assumption Mitala Maria Parish in Buwama. The event demonstrated improved silage-making technologies to help farmers address low milk and meat production due to poor quality feeds, especially during dry seasons. The event, themed "Collaborative Knowledge Co-Creation and Sharing for Livestock Feed Climate-Smart Innovations in Uganda," was part of a four-year project titled "Building Capacity for Innovation

and Advancement of Climate Smart Agriculture in East and Southern Africa" (CICSA-E&SA). The project is funded by the Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education (Diku) and involves partnerships with the Norwegian University of Life Sciences, Maseno University (Kenya), LUANAR (Malawi), and DARS (Malawi). This initiative aims to equip farmers with better production systems to adapt to climate change and improve livestock productivity.

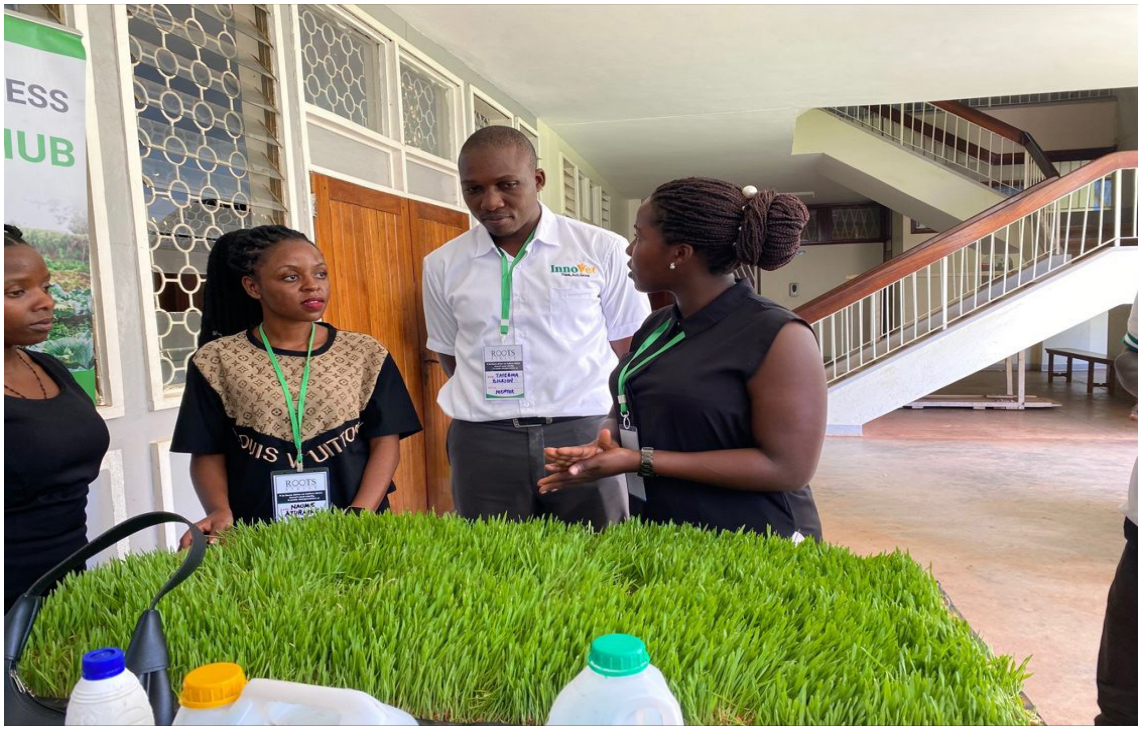


Farmers look at a demo of the process of silage preparation during a farmer field school in Mitala Maria



Dr. Herbert Mukiibi (In coat) demonstrating feeding of cattle to Hay made using Silogist, in Mitala Maria

3.3. The Roots Africa University Clubs' exhibition and mentorship engagement at CoVAB.



At the Exhibition, Dr. Dickson Tayebwa (Centre in white) interacts with the exhibitors

The Roots Africa University Clubs' exhibition and mentorship engagement was held at the College of Veterinary Medicine, Animal Resources, and Biosecurity, bringing together several stakeholders who held a discourse centered around youth involvement in addressing critical issues such as poverty and hunger. The event, which also marked the launch of the Wakiso District Human Rights Report for the year 2023, was held on May 11, 2024, and was hosted by The INNOVETS, which is a student-driven initiative based in CoVAB. It is dedicated to empowering students with hands-on skills, fostering critical thinking, and cultivating research expertise, as well as enabling the development of innovative ideas that have the potential to transform the livestock sector in Uganda.

3.4 Launch of the MorTAR Project to Tackle Tick and Acaricide Resistance

The project, Monitoring of Ticks and Acaricide Resistance Laboratory Network (MorTAR) was launched in October 2024. This groundbreaking initiative aims to combat Tick Acaricide Resistance and Tick-Borne Diseases through a network of nine specialized laboratories. The MorTAR project is designed to develop sustainable and scalable diagnostic capabilities to address these significant challenges in sustainable livestock production. The project will establish a National Database with inputs from the network of laboratories and collaboration with key stakeholders, including the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), researchers, academia, and local governments, with Dr. Patrick Vudriko, as Principal Investigator.

3.5 CoVAB joins efforts in combating cyberattacks on laboratories handling high-risk biological materials

Researchers at CoVAB, in collaboration with the Uganda Virus Research Institute (UVRI) and supported by the Civilian Research and Development Foundation (CRDF) Global, are addressing the increasing threat of cyberattacks on laboratories handling high-risk biological materials. Their initiative, "Establishment of Cyber Biosecurity Inventory and Procedures for Effective Safety and Administrative Controls for COVAB and UVRI Laboratories in Uganda," aims to secure and protect these laboratory facilities. The project focuses on developing comprehensive Cybersecurity Standard Operating Procedures, guidelines, and manuals to ensure the safety of laboratories managing high-risk pathogens, which could pose significant national or global security risks if compromised. Additionally, the project seeks to raise awareness about cyber threats, cyber biosecurity, biosafety, and biosecurity among staff, scientists, researchers, and management at both institutions. This will promote cybersecurity best practices and ensure the security of their critical work. This is a crucial initiative given the move of Makerere University to become research-led coupled with the ever-increasing advances in scientific research and biotechnology and is crucial in ensuring that the University and other research centers contribute to global scientific progress safely and securely.

3.6 Improving the understanding, diagnosis and control of zoonotic diseases including Crimean congohaemorrhagic fever

The molecular and computational biology research group led by Dr Muhanguzi Dennis at COVAB together with the Foundation for Research and Technology-Hellas (FORTH), Greece are leading a large consortium (7 sub-Saharan institutions) supported by the European commission (Euro 6.131 million) to investigate the role of ticks as disease vectors, focusing on Crimean-Congo Hemorrhagic Fever. Crimean-Congo Hemorrhagic Fever is often a fetal disease transmitted from animals to humans by tick bites. Over the next three years, these studies will determine the circulating genotypes of the Crimean-Congo Hemorrhagic Fever (CCHF), genetic and metabolic mechanisms of acaricide resistance, and how these are driving CCHF outbreaks as well as develop bedside diagnostics for Crimean-Congo Hemorrhagic Fever virus. These studies will also support capacity building in the epidemiology, detection, and control of CCHFV by training three PhD students and one postdoctoral fellow and procurement of high throughput molecular and immunodetection equipment for the diagnosis of Crimean-Congo Hemorrhagic Fever.

3.7 The Centre for Biosecurity and Global Health

Based at COVAB, the Centre for Biosecurity and Global Health (CeBiGH) continues its efforts toward the development of recombinant vaccines and diagnostics, with major funding from the Science Technology, and Innovations Office of the President (STI-OP). Cutting-edge scientific research laboratories with up to Biosafety Level 3 (BSL3) containment have been established. Using COVID-19 as the starting point, prototype prognostic (testing disease biomarkers) and screening tests have been developed in the form of lateral flow assays (Rapid diagnostic test formats). In addition, recombinant vaccine prototypes including the anti-tick vaccine, COVID-19, and East Coast Fever (an important tick-borne disease of cattle) have been

developed. This research has been extended to other diseases for which diagnostics/prognostics and vaccines are urgently needed. CeBiGH has also positioned itself as a service center to support researchers from Makerere University and beyond with pre-clinical studies in animal models before new vaccines, therapeutics, or diagnostics can be tested in human clinical trials. The Central Laboratory Animal Research Facility (CLARF) was specifically supported by STI-OP to offer this critical service.

3.8 Capacitating One Health in Eastern and Southern Africa (COHESA) Project

CoVAB is part of a consortium that includes the International Livestock Research Institute (ILRI), the French Agricultural Research Centre for International Development (CIRAD), and the International Service for the Acquisition of Agri-biotech (ISAAA). This project, funded by the European Union, aims to build One Health capacity in Eastern and Southern Africa.

3.9 CoVAB's $400,000 Grant for Scientific Equipment

CoVAB secured a significant grant worth **$400,000 (Ug. Shs. 1.6 billion)** under the **Seeding Labs Instrumental Access program.** This funding will provide CoVAB with **modern scientific equipment,** enhancing teaching, research, and diagnostic capabilities in the **Department of Veterinary Pharmacy, Clinical, and Comparative Medicine.** The initiative aims to remove barriers to **STEM education and research**, offering students hands-on opportunities to develop essential skills while enabling scientists to generate new knowledge. With upgraded facilities, CoVAB is set to advance **veterinary diagnostics, pharmaceutical research, and comparative medicine studies,** reinforcing Uganda's leadership in veterinary science and biosecurity. The leadership expressed enthusiasm for the grant, noting that **this investment will strengthen research infrastructure,** improve student learning experiences, and contribute to scientific discoveries that benefit both animal and human health. As Makerere University continues to prioritize academic excellence and innovation, the acquisition of cutting-edge equipment marks a transformative milestone in veterinary education and research in Uganda.

3.10 AU-IBAR Evaluates Makerere University for Regional Centre of Excellence in Fisheries and Aquaculture

The African Union Inter-African Bureau for Animal Resources (AU-IBAR) visited Makerere University on **March 11-12, 2024,** to assess its suitability for hosting a **Regional Centre of Excellence in Fisheries and Aquaculture**. The evaluation followed an **Expression of Interest** submitted by the **College of Veterinary Medicine, Animal Resources and Biosecurity (CoVAB)** and the **College of Natural Sciences (CoNAS).** The AU-IBAR team, led by **Etienne Hinrichsen,** conducted a **two-day review** of Makerere's **teaching and research facilities**, interacted with staff and students, and examined aspects like **curricula, staff qualifications, and research capabilities**. The mission aimed to determine whether Makerere could serve as a **continental hub for training and research in Fisheries and Aquaculture.** The Vice Chancellor, **Prof. Barnabas Nawangwe** expressed optimism about Makerere's ability to host the centre, citing its **existing infrastructure and expertise.** The university's collaboration with the **National Fisheries Resources Research Institute (NaFFIRI)** was also highlighted as an advantage.

3.11 Strengthening One Health Approach through the COHESA Project Implementation

The College of Veterinary Medicine, Animal Resources, and Biosecurity (CoVAB) played a pivotal role in implementing the **Capacitating One Health in Eastern and Southern Africa (COHESA) project,** aimed at strengthening cross-sectoral collaboration to address health challenges affecting humans, animals, and the environment. As part of the initiative, CoVAB has spearheaded **stakeholder engagement**, bringing together representatives from **government, academia, research institutions, and civil society** to discuss pressing One Health issues. Strategic workshops have focused on challenges such as **zoonotic diseases, antimicrobial resistance, and environmental health**, fostering collaborative solutions among key partners. Additionally, the college has led **capacity-building efforts**, providing specialized training to **researchers, veterinarians, public health officials, and environmental experts**. These sessions have equipped stakeholders with essential skills in **disease surveillance, rapid response mechanisms, and sustainable intervention strategies,** enhancing the region's preparedness against health threats. Through partnerships with **government health ministries, universities, and international development agencies**, CoVAB has facilitated research initiatives addressing emerging health concerns, including the impact of **climate change on disease transmission and food security**. The integration of research findings into policy frameworks has further strengthened **public health resilience** across Eastern and Southern Africa.

The COHESA project continues to drive advancements in the **One Health approach**, reinforcing Uganda's and the broader region's ability to **anticipate, respond to, and mitigate interconnected health challenges**.

3.12 Improving the understanding, diagnosis, and control of zoonotic diseases, including Crimean Congo hemorrhagic fever

Dr. Muhanguzi Dennis and his team, along with the Foundation for Research and Technology-Hellas (FORTH), Greece, led a consortium of seven Sub-Saharan institutions supported by a €6.131 million European Commission grant. Over three years, they will investigate the role of ticks in transmitting Crimean-Congo Hemorrhagic Fever (CCHF), exploring circulating genotypes and acaricide resistance. They aim to develop bedside diagnostics for the CCHF virus and build capacity by training three PhD students and one postdoctoral fellow and acquiring advanced diagnostic equipment.

3.13 Combating Tick Acaricide Resistance and Tick-Borne Diseases

The MorTAR project, launched in October 2024, aims to combat Tick Acaricide Resistance and Tick-Borne Diseases through a network of nine specialized laboratories. It focuses on developing sustainable and scalable diagnostic capabilities to address challenges in livestock production. The project will establish a National Database with inputs from these laboratories and collaborate with key stakeholders, including the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), researchers, academia, and local governments. Dr. Patrick Vudriko is the Principal Investigator leading the project.

3.14 National Biosafety Committee Evaluates Anti-Tick Vaccine Development Project at Makerere University

On July 23rd–24th, 2024**,** The National Biosafety Committee (NBC) conducted a two-day audit of the Anti-Tick Vaccine Development Project at Makerere University's Centre for Biosecurity and Global Health (CEBIGH), CoVAB. The evaluation aimed to enhance the project's effectiveness and ensure its successful development. Participants included representatives from the Anti-Tick Vaccine Project team, Alfasan (U) Ltd, and CoVAB leadership**.** The NBC audit team, led by Chairperson Prof. Noah Kiwanuka**,** examined project protocol data management, laboratory processes, and data analysis, assessing the efficiency of various departments involved in vaccine development. The National Biosafety Committee**,** established under the Uganda National Council for Science and Technology (UNCST)**,** plays a crucial role in regulating genetically engineered organisms. The committee ensures that advancements in biotechnology align with biosafety standards, protecting individuals, communities, and the environment while fostering innovation in genetic engineering applications. Prof. Enoch Matovu led the NBC team on a tour of the laboratories at CEBIGH, where significant research on the Anti-Tick Vaccine has been conducted. The project's Principal Investigator, Dr. Margaret Saimo-Kahwa, delivered a comprehensive presentation highlighting the progress, challenges, and potential impact of the vaccine. The Anti Tick Vaccine is a timely intervention given the growing concerns over tick resistance to existing treatments and the urgent need for sustainable tick control solutions, and therefore, the validation of this vaccine carries major implications. If proven effective, since it could revolutionize tick control in Uganda and beyond, significantly reducing economic losses for farmers while ensuring improved livestock health.

3.15 Presentation of Findings on Dog Bite and Rabies Management at AFROHUN Conference

On April 24-26, 2024, during the 4th AFROHUN International One Health Conference, held at Ole Sereni Hotel in Nairobi, featured a compelling presentation by Dr. Tayebwa on enhancing dog bite and rabies management in Tororo District, Eastern Uganda. The presentation, titled A *Comprehensive One Health Assessment of Prevention, Preparedness, and Response*, highlighted strategies for mitigating rabies risks, improving community awareness, and strengthening healthcare interventions in affected regions. With a One Health approach, Dr. Tayebwa underscored the importance of collaboration between veterinary, medical, and public health sectors to effectively address rabies prevention and response mechanisms. The AFROHUN International One Health Conference, a platform for interdisciplinary discussions on health and biosecurity, brought together experts from across Africa to exchange insights on sustainable solutions for zoonotic diseases and public health threats.

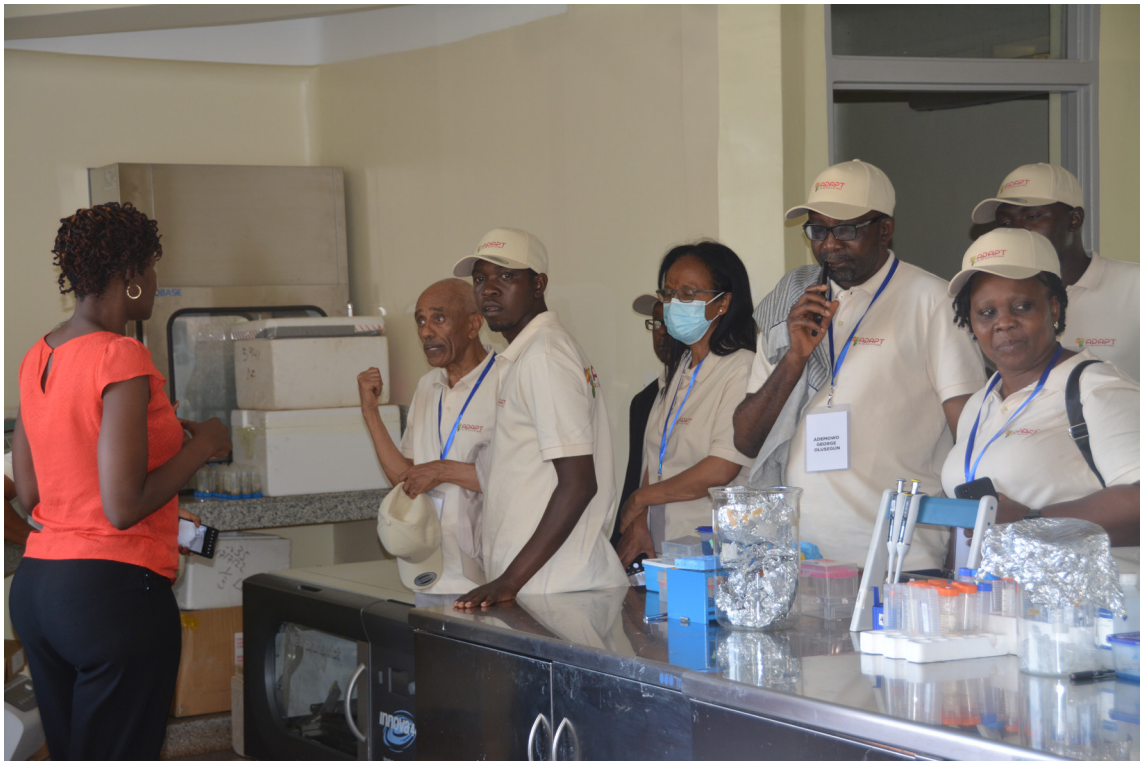
3.16 Highlights on Rabies Management at JASH 2024

The 18th Joint Annual Scientific Health Conference (JASH), held at Hotel Africana, on *October 16-18, 2024,* featured an insightful presentation by Dr. Dixon Tayebwa on the management and control of rabies in the One Health era. Dr. Tayebwa's presentation, titled *Understanding the Management and Control of Rabies in the One Health Era: Student Engagement and Field*

Experiential Learning and Exploration of Circumstances Surrounding Bites from Free-Roaming Dogs on Rampage, focused on addressing rabies prevention through interdisciplinary approaches. Emphasizing student involvement in field learning, Dr. Tayebwa underscored the importance of experiential education in tackling public health challenges. His research explored the circumstances surrounding dog bites, shedding light on measures to improve response strategies and minimize rabies-related risks. The JASH conference brought together health professionals, researchers, and policymakers to discuss pressing health issues, fostering collaboration and knowledge-sharing on disease control and prevention.

3.17 The Anti-Tick Vaccine Research and Development Laboratory

The Centre for Biosecurity and Global Health (CEBIGH) is taking a major step forward in combating tick-borne illnesses with the establishment of a state-of-the-art laboratory dedicated to the development of potent anti-tick vaccine molecules and biologicals. The lab, located at CEBIGH, aims to revolutionize prevention strategies through innovative research and vaccine development. The primary focus of the lab is to pioneer the creation of innovative anti-tick vaccine formulations capable of combating a diverse range of tick species. A team of devoted researchers is conducting in-depth studies to characterize various tick species, delving into their biology and behavior to identify vulnerabilities that can be targeted through vaccine development.



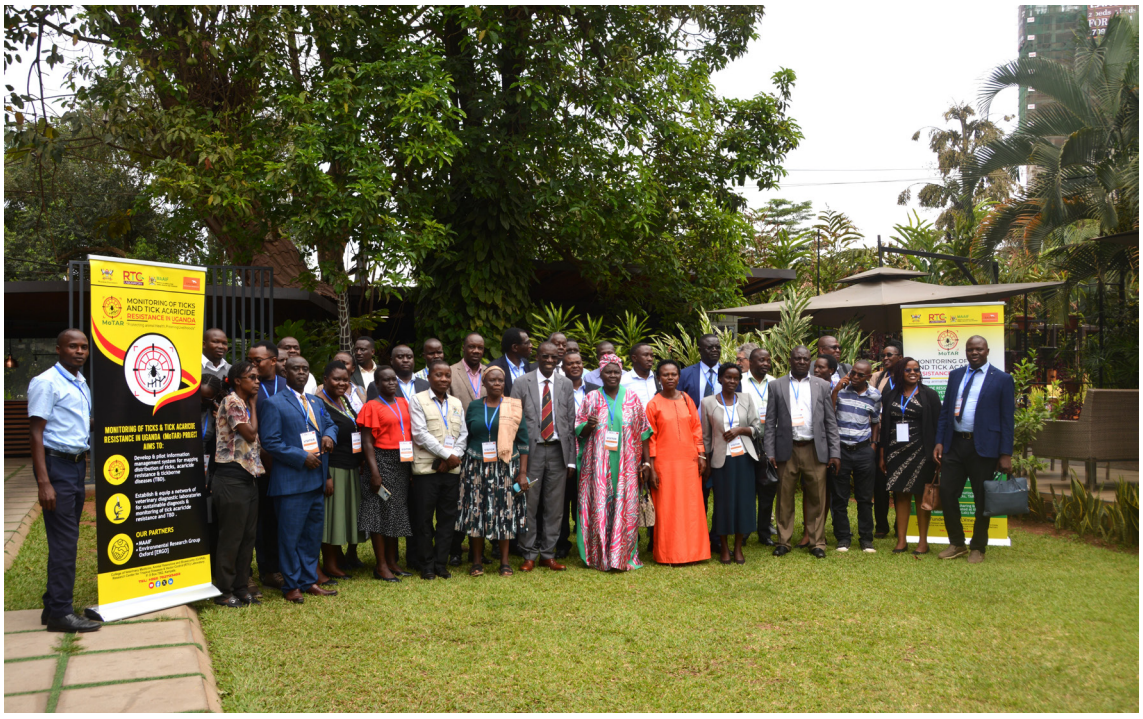
The Africa One Health Network for Disease Prevention (ADPAT) Team visited the Labs at CoVAB

3.18. The Institutional Animal Care and Use Committee (IACUC)

CoVAB hosts the Institutional Animal Care and Use Committee **(IACUC)** that promotes Animal welfare Standards in scientific research that involves the use of animals. The **Institutional Animal Care and Use Committee** (IACUC) is a vital regulatory body that ensures ethical and humane treatment of animals used in scientific research. Here's a deeper look into its responsibilities and significance. Among other things, the **IACUC does the following;**

- **Protocol Review:** The committee evaluates all proposed research involving animals to ensure that procedures align with ethical guidelines and regulatory standards.
- **Facility Inspections:** Regular inspections of animal housing and care facilities help maintain humane conditions and compliance with federal regulations.
- **Oversight and Compliance:** It ensures researchers follow laws such as the Animal Welfare Act (AWA) and Public Health Service (PHS) Policy on Humane Care and Use of Laboratory Animals.
- **Training and Education:** Researchers and staff working with animals receive guidance and training on ethical practices and proper handling.
- **Ethical Decision-Making:** The committee assesses whether the use of animals is scientifically justified, aiming to reduce or replace animal use where possible.

Without IACUC oversight, ethical concerns regarding animal welfare could go unchecked in scientific research. The committee plays a crucial role in balancing scientific advancement with responsible treatment of animals, ensuring that experiments minimize suffering and adhere to best practices.



Monitoring of Ticks and Acaricides Resistance Laboratory Network, launched on October 10th, 2024

3.20. Staff Publications

1. Marin, P. M., Munyeme, M., Kankya, C., Jubara, A. S., Matovu, E., Waiswa, P., Sanchez Romano, J., Mutebi, F., Onafruo, D., Kitale, E., Benard, O., Buhler, K. J., & Tryland, M. (2024). Medication nonadherence and associated factors in patients with tuberculosis in Wau, South Sudan: a cross-sectional study using the World Health Organization multidimensional adherence model. *Archives of Public Health*, 82, Article number: 107. **https://doi.org/10.1186/s13690-024-01339-9**

2. Onafruo, D., Klein, J., Erume, J., Kankya, C., Jubara, A., Kokas, I., Munyeme, M., Alinaitwe, L., Kitale, E., Marin, P., Sabbath, E., & Dreyfus, A. (2024). Molecular and serological prevalence of Leptospira spp. among slaughtered cattle and associated risk factors in the Bahr El Ghazal region of South Sudan. *Journal of Veterinary Science & Technology*, 12, 56-68. https://doi.org/10.4172/2157-7579.1000452

3. Kulabako, C. T., Neema, S., Ninsiima, L. R., Atuheire, C. G., Kal, D. O., Atekyereza, P., Okello, J., & Tryland, M. (2024, August 8). Understanding brucellosis: knowledge, perceptions, and self-reported prevalence among agro-pastoralists in Nakasongola, Uganda. *BMC Infectious Diseases.*

4. Tayebwa, D. S., Vudriko, P., Tuvshintulga, B., Guswanto, A., Nugraha, A. B., Gantuya, S., et al. (2024). Molecular epidemiology of Babesia species, *Theileria* parva, and *Anaplasma marginale* infecting cattle and the tick control malpractices in Central and Eastern Uganda. *Ticks and Tick-borne Diseases*.

5. Sati, N. M., Card, R., & Mwiine, F. N. (2024, July). Antimicrobial resistance and phylogenetic relatedness of Salmonella serovars in indigenous poultry and their drinking water sources in North Central Nigeria.

6. Nkamwesiga, J., Korennoy, F., Lumu, P., Nsamba, P., Mwiine, F. N., Roesel, K., Wieland, B., Perez, A., Kiara, H., & Muhanguzi, D. (2024). Risk-based control of peste des petits ruminants in Uganda.

7. Atuheire, C., Okwee Acai, J., Taremwa, M., & Tryland, M. (2024, July). Descriptive analyses of knowledge, attitudes, and practices regarding rabies transmission and prevention in rural communities near wildlife reserves in Uganda: A One Health cross-sectional study.

8. Ainebyoona, S., Abizera, H., & Mwiine, F. N. (2024). Seroprevalence of contagious bovine pleuropneumonia (CBPP) in cattle from Karamoja region, North-eastern Uganda. BMC Veterinary.

9. Kumsa, B., Kimbita, E., Byaruhanga, J., & Mwiine, F. N. (2024). Acaricide resistance status of livestock ticks from East and West Africa and in vivo efficacy of acaricides to control them. International Journal for.

10. Taremwa, M., Ssali, S. N., & Mwiine, F. N. (2024). Sero-prevalence of syphilis and associated risk factors among pregnant women attending antenatal care at an urban-poor health centre in Kampala, Uganda. The Pan African.

11. Tweyongyere, R., Nkamwesiga, J., & Etiang, P. (2024). Seroprevalence of contagious bovine pleuropneumonia (CBPP) in cattle from Karamoja region, North-eastern Uganda. BMC Veterinary.

12. Thomson, E. C., & Muhanguzi, D., & Tweyongyere, R. (2024). Identification and distribution of Rhipicephalus microplus in selected high-cattle density districts in Uganda: signaling future demand for novel tick control. BMC Veterinary.

13. Kazibwe, A., da Silva Filipe, A., & Tweyongyere, R. (2024). Viruses associated with measles-like illnesses in Uganda. Journal of Infection.

14. Kibuuka, H., Mworozi, E., & Tweyongyere, R. (2024). Molecular detection of Coxiella burnetii in ticks collected from animals and the environment in Uganda. Zoonoses and Public Health.

15. Ndekezi, C., Bbira, J., Ochwo, S., & Tweyongyere, R. (2024). Distribution and prevalence of ixodid tick species (Acari: Ixodidae) infesting cattle in Karamoja region of northeastern Uganda. BMC Veterinary.

16. Zirintunda, G., Kateregga, J., Nalule, S., Vudriko, P., Biryomumaisho, S., & Acai, J. O. (2024). An inventory of ethnoveterinary knowledge for chicken disease control in Soroti district, Uganda. *Journal of Medicinal Plants for Economic Development*.

17. Atuheire, C. G. K., Okwee-Acai, J., Taremwa, M., Ssajjakambwe, P., Munyeme, M., Kankya, C., Terence, O., Ssali, S. N., Mwiine, F. N., Buhler, K. J., & Tryland, M. (2024). Households neighboring wildlife protected areas may be at a higher risk of rabies than those located further away: a community-based cross-sectional cohort study at Pian Upe game reserve, Bukedea district, Eastern Uganda. *Frontiers in Tropical Diseases*.

18. Mwiine, F. N., & Others. (2024). Responsible and prudent use of anthelmintic chemicals to help control anthelmintic resistance in grazing livestock species. *WOAH*.

19. Kankya, C., Okello, J., Muwanguzi, D., Monje, F., Mugizi, D., Muleme, J., Baguma, J., Taremwa, M., Ayebale, R., Ayoo, S., Knight-Jones, T. J. D., Roesel, K., Lukuyu, B. A., & Richards, S. (2024). Impacts of One Health on Education, Research, and Development: A Case of Uganda. *One Health Cases*.

20. Kankya, C., Okello, J., Muwanguzi, D., Monje, F., Mugizi, D., Muleme, J., Baguma, J., Taremwa, M., Ayebale, R., Ayoo, S., Knight-Jones, T. J. D., Roesel, K., Lukuyu, B. A., & Richards, S. (2024). One Health in Uganda: COHESA project. *International Livestock Research Institute*. Link

21. Okwee-Acai, J., Agwai, B., Mawadri, P., Kesiime, C., Tubihemukama, M., Kungu, J., & Odur, B. (2024). Prevalence of common conditions and associated mortalities of dogs treated at the small animal clinic, Makerere University, Kampala, Uganda. *BMC Veterinary Research*.

22. Kankya, C., Okello, J., Muwanguzi, D., Monje, F., Mugizi, D., Muleme, J., Baguma, J., Taremwa, M., Ayebale, R., Ayoo, S., Knight-Jones, T. J. D., Roesel, K., Lukuyu, B. A., & Richards, S. (2024). Impacts of One Health on Education, Research, and Development: A Case of Uganda. *One Health Cases*.

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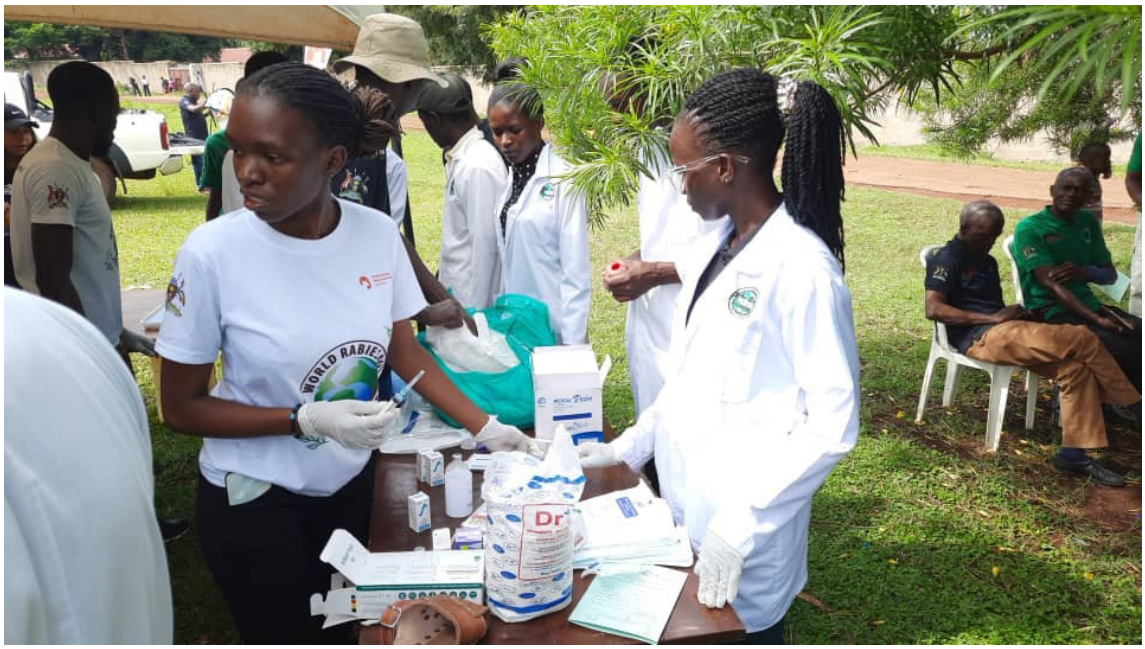


CoVAB students during an outreach

COMMUNITY OUTREACH, KNOWLEDGE TRANSFER AND PARTNERSHIPS

4

During the course of the year, the college convened and participated in a number of activities that included outreaches aimed at disseminating knowledge, and forging partnerships with varied stakeholders both national and international.

4.1 Bio-Angle Vacs SDN.BHD

CoVAB got into partnership with this Malaysian pharmaceutical company to improve veterinary vaccine production for small ruminants. This partnership aims to develop innovative products that benefit farmers and society. The team was at the college wherethey interacted with a section of staff, laying strategic direction for the partnership for mutual benefit to the two institutions.

4.2 Clinical Trials for Innovative Anti-Pneumonia Spray Vaccine

In the effort to improve livestock health, TicVac Uganda, in collaboration with Alfasan Uganda Ltd and Bio-Angle Vacs, is set to begin clinical trials for an innovative anti-pneumonia spray vaccine in Uganda. This pioneering vaccine, known as STVac, has demonstrated an impressive efficacy rate of 98% in reducing mortality among small ruminants. The announcement was made during a meeting held on 29th May 2024 at the College of Veterinary Medicine, Animal Resources and Biosecurity (CoVAB), Makerere University. Dr. Margaret Saimo-Kahwa, Principal Investigator of the Anti-Tick Vaccine Project, commended the delegation from Bio-Angle Vacs for their crucial role in developing the Pneumonic Pasteurellosis Intranasal Spray Vaccine. This innovative vaccine is designed to protect goats and sheep from respiratory tract infections. Dr. Saimo emphasized the importance of the collaborative efforts between Bio-Angle Vacs in Malaysia and Makerere University, highlighting the critical nature of the upcoming clinical trials. She encouraged the Malaysian team to visit Ugandan facilities to ensure seamless preparedness for conducting the trials

4.3 The Anti-Tick Vaccine Project

In collaboration with Alfasan Uganda Limited, CoVAB is addressing the problem of ticks and tick-borne diseases in the sub-Saharan region of Africa. The project uses biotechnology to develop an anti-tick vaccine, which is expected to significantly reduce tick-borne challenges in livestock, improving food security and animal health. The Makerere University Anti-Tick Vaccine Project Committee visited Alfasan Uganda Ltd to assess advancements in the establishment of the Anti-Tick Vaccine production line. This milestone reinforces the growing collaboration between Makerere University and Alfasan in the development of Uganda's first locally manufactured anti-tick vaccine. The Chairperson of the Anti-Tick Vaccine Project Steering Committee, Prof. Henry Alinaitwe, underscored the national significance of the initiative, noting its

inclusion in the Ugandan national budget. He also detailed the division of production equipment between Makerere University and Alfasan, stressing the importance of reviewing progress at the vaccine production site in Namanve. The facility's pharmacist, Mr. Ivan Kafeero, shared insights into Alfasan's evolution from an international collaboration to a leading private pharmaceutical entity in Uganda. He highlighted the joint production of a laboratory experimental vaccine in 2022, which prompted the facility's expansion to accommodate large-scale vaccine manufacturing. During a guided tour of the production site, the committee explored raw material warehouses, manufacturing sections, quality control laboratories, and packaging areas. The visit reaffirmed the facility's readiness for vaccine production while emphasizing the need for sustainable energy and water sources to support its operations efficiently. This milestone marks a pivotal moment in Uganda's fight against tick-borne diseases, aiming to enhance livestock health and improve agricultural productivity.

4.4 CoVAB's Partnership with NaLIRRI

The College of Veterinary Medicine, Animal Resources and Biosecurity (CoVAB) and the National Livestock Resources Research Institute (NaLRRI) recognized the urgent need to formalize their collaboration in skilling, training, joint research activities, supervision, and grant writing. By leveraging each other's strengths and expertise, the two institutions aim to enhance productivity in their respective mandates, fostering significant advancements in livestock research and education. On Tuesday, December 17th, 2024, a delegation from CoVAB, led by Principal Prof. Frank Norbert Mwiine, visited NaLRRI in Nakyesasa upon inviattion by NaLRRI's Director of Research, Prof. Samuel Majalija, formerly a Deputy Principal at CoVAB and his team, who facilitated a guided tour of the institute's facilities and enterprises. This immersive experience provided valuable learning opportunities and strengthened the institutions' commitment to collaboration. The visit's primary objective was to establish a formal partnership in teaching, research, and outreach, setting the stage for impactful future initiatives. CoVAB took a stride to strengthen its partnership with the National Livestock Resources Research Institute (NaLIRRI) to enhance skilling, training, joint research activities, supervision, and joint grant writing. This collaboration aims to improve productivity in livestock research and education, benefiting the agricultural sector.

CoVAB's partnership with NaLRRI/NARO is driving forward vital veterinary research and biosecurity initiatives. Assoc. Prof. James Acai Okwee highlighted the college's strengths in zoonotic pathogen screening for both human and animal infections, as well as ongoing research into ticks and tick-borne diseases. He also emphasized the Centre for Biosecurity and Global Health's leadership in vaccine development at CoVAB. Additionally, CoVAB has acquired land in Nakyesasa, in collaboration with NARO, to support key projects, including livestock demonstration farms with backing from the Korean government. This expansion strengthens the college's research capacity and practical training efforts, ensuring that students and researchers engage in hands-on solutions to livestock health challenges.

4.5 CoVABs Animal Ambulatory Clinic Support to Livestock Farmers with On-Demand Veterinary Services

Staff in the department's Large Animal Ambulatory Clinic are actively engaged in providing essential veterinary care and

extension services to livestock owners in need. This specialized unit remains on standby, responding to farmers' calls for urgent veterinary support, ensuring timely treatment and intervention for animal health concerns. Through this initiative, veterinarians and field experts, together with students, travel directly to farms, diagnosing and treating livestock-related conditions while also offering guidance on disease prevention, nutrition, and herd management. By addressing veterinary emergencies and offering professional advice, the clinic plays a crucial role in improving livestock welfare and supporting sustainable agricultural practices.

4.6 Free Community Veterinary Clinics Across Uganda

In a bid to enhance animal health and welfare, Dr. Dixon Tayebwa spearheaded collaborative efforts with organizations including Vetconekt Initiative, Uniquely Paws, the Uganda Small Animal Practitioners Association, Kampala Capital City Authority, and the Ministry of Agriculture, Animal Industry, and Fisheries. Together, they have organized free community veterinary clinics across Uganda, providing crucial services to pet owners and the general public. These outreach programs focus on community education, dog and cat vaccinations, and sterilization surgeries to control the pet population and prevent disease transmission. Veterinary students actively participate, gaining hands-on experience in animal care and public health interventions. In 2024, the initiative successfully organized 37 veterinary clinics across different regions, vaccinating over 5,822 pets and conducting sterilization surgeries on 1,166 animals. The impact of these efforts continues to strengthen Uganda's approach to responsible pet ownership and disease prevention.

4.7 MVSA Hosts Successful Dog and Kennel Wash Event at COVAB

On August 22, 2024, the Makerere Veterinary Students Association (MVSA) successfully organized a dog and kennel wash event at the College of Veterinary Medicine, Animal Resources, and Biosecurity (COVAB), offering essential grooming services and raising awareness about proper dog care practices. The event provided an opportunity for students to engage in practical animal care while educating pet owners about hygiene, disease prevention, and responsible pet management. Dogs received thorough grooming, while kennels were cleaned to ensure improved health and comfort for the animals. MVSA continues to play a vital role in promoting veterinary education and community outreach, emphasizing the importance of animal welfare and best practices in pet care. The initiative not only benefited the dogs but also strengthened students' hands-on experience in veterinary skills.

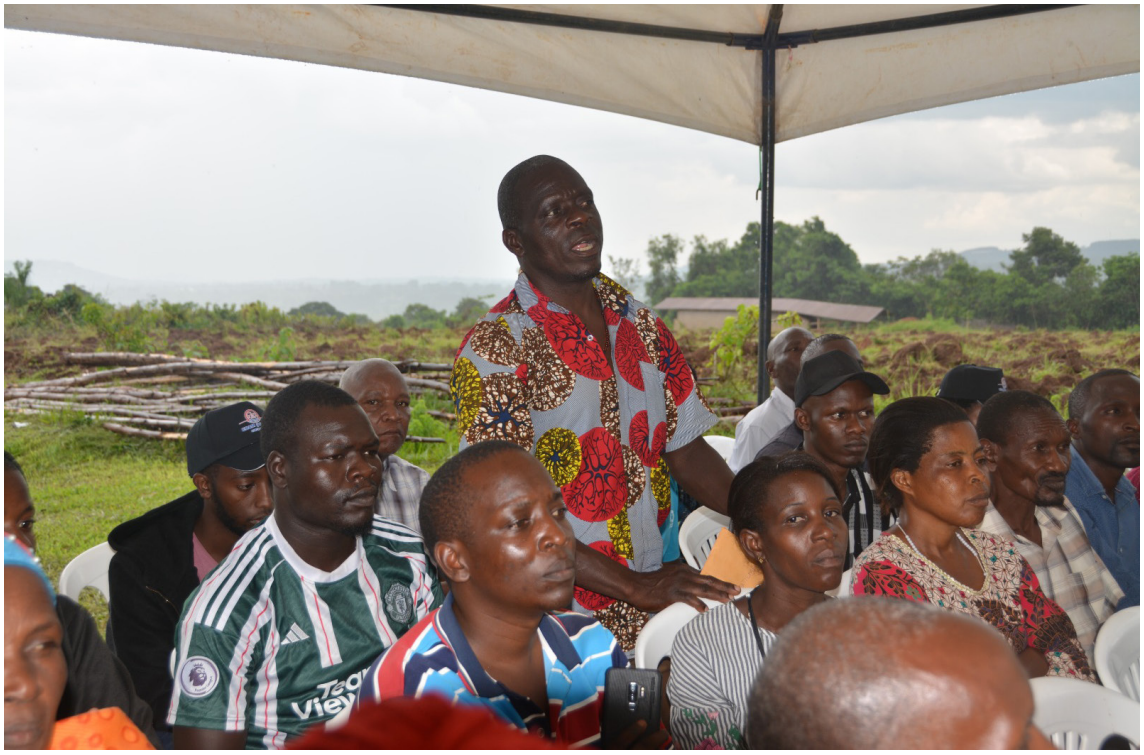
4.8 The 2024 Summer School

The 2024 Summer School, the International Cultural Boma, and the AFROHUN Showcase were held on June 20th, 2024, at the Ruth Keeslings Centre, and for the first time involved CoVAB students. The Boma was the final event of the CoVAB-Mississippi State University's (MSU) Tropical Veterinary Medicine and One Health Study Abroad program. The study abroad course focuses on animal production and health management, conservation medicine, aquatic health, wildlife health, public health, food safety, security, and inculcating One Health principles while infusing multicultural experiences. During the presentations, the participants expressed what they enjoyed most while on the program, and this included observing the human-wildlife interactions, working on wildlife,

and the identified difference between the US and Uganda, the animal welfare champion, as well as having Ugandan students included on the program. The Principal, Prof. Frank Nobert Mwiine said the Boma was a great avenue for sharing information and learning from each other, drawing from the experiences of the students while out in the community and the wild. He commended Mississippi State University for the long relationship they have had with CoVAB and appreciated the inclusion of the Uganda students into the program. He expressed optimism that the summer school will grow into problem-solving partnerships in research, training, and community development.

During a three-week excursion in Uganda, students from Mississippi State University and their counterparts from CoVAB engaged in immersive field trips, gaining hands-on experience at the intersections of animals, humans, and the environment. The team from Mississippi State University expressed gratitude to CoVAB for leading the organization of the Summer School, which offered students their first exposure to Africa.

Prof. Stephen Reichley, the team leader, highlighted how the program opened doors for future collaborations, including student exchange programs and graduate research. He emphasized that stepping outside familiar academic environments and embracing the unknown profoundly influenced students' academic growth, practical skills, and broader outlook on life. This initiative continues to create lasting impressions, fostering global connections and enriching educational experiences.



Farmers interact with CoVAB staff during a community outreach

THE HUMAN RESOURCE FUNCTION

5

Human Resources, both Academic and Administrative as well as support staff are key in the college's effort to realise its mandate. The staffing position at the college level is gradually getting better, although there is still need for filling the critical positions at levels of professors, lecturers and technicians as shown in the table below.

ACADEMIC STAFF ESTABLISHMENT AS AT DECEMBER 2024				
SCHOOL OF VETERINARY MEDICINE AND ANIMAL RESOURCES (SVAR)				
DEPARTMENT OF LIVESTOCK & INDUSTRIAL RESOURCES (LIR)				
RANK	ESTABLISHED	FILLED	VARIANCE	% FILLED
Professor	4	1	3	25
Associate Professor	5	0	5	0
Senior Lecturer	4	2	2	50
Lecturer	4	1	3	25
Assistant Lecturer	4	5	-1	125
Total	**21**	**9**	**12**	**43**
DEPARTMENT OF VETERINARY PHARMACY, CLINICAL & COMPARATIVE MEDICINE (PCM)				
RANK	ESTABLISHED	FILLED	VARIANCE	% FILLED
Professor	4	1	3	25
Associate Professor	5	4	1	80
Senior Lecturer	3	2	1	67
Lecturer	4	6	-2	150
Assistant Lecturer	4	8	-4	200
Total	**20**	**21**	**-1**	**105**

DEPARTMENT OF WILDLIFE AND AQUATIC ANIMAL RESOURCES (WAAR)				
RANK	ESTABLISHED	FILLED	VARIANCE	% FILLED
Professor	4	1	3	25
Associate Professor	5	2	3	40
Senior Lecturer	4	2	2	50
Lecturer	4	6	-2	150
Assistant Lecturer	4	2	2	50
Total	**21**	**13**	**8**	**62**
SCHOOL OF BIOSECURTY, BIOTECTHNICAL AND DIAGNOSTIC SCIENCES (SBLS)				
DEPARTMENT OF BIOTECHNICAL AND DIAGNOSTIC SCIENCES (BDS)				
RANK	ESTABLISHED	FILLED	VARIANCE	% FILLED
Professor	4	3	1	75
Associate Professor	5	0	5	0
Senior Lecturer	3	2	1	67
Lecturer	2	6	-4	300
Assistant Lecturer	2	1	1	50
Total	**16**	**12**	**4**	**75**
DEPARTMENT OF BIOMOLECULAR RESOURCES AND BIOLAB SCIENCES (BBS)				
RANK	ESTABLISHED	FILLED	VARIANCE	% FILLED
Professor	4	2	2	50
Associate Professor	5	1	4	20
Senior Lecturer	4	5	-1	125
Lecturer	4	4	0	100
Assistant Lecturer	4	4	0	100
Total	**21**	**16**	**5**	**76**
DEPARTMENT OF BIOSECURITY, ECOSYSTEM AND VETERINARY PUBLIC HALTH (BEP)				
RANK	ESTABLISHED	FILLED	VARIANCE	% FILLED
Professor	4	1	3	25
Associate Professor	5	1	4	20
Senior Lecturer	4	3	1	75
Lecturer	4	3	1	75
Assistant Lecturer	4	1	3	25
Total	**21**	**9**	**12**	**43**

COLLEGE SUMMARY				
RANK / DESIGNATION	ESTABLISHED	FILLED	VARIANCE	% FILLED
Professor	24	9	15	38
Associate Professor	30	8	22	27
Senior Lecturer	22	16	6	73
Lecturer	22	26	-4	118
Assistant Lecturer	22	21	1	95
Total	**120**	**80**	**40**	**67**

Sending off CoVAB staff, January 19th, 2024

Compiled by: Harriet Musinguzi, Principal Communication Officer
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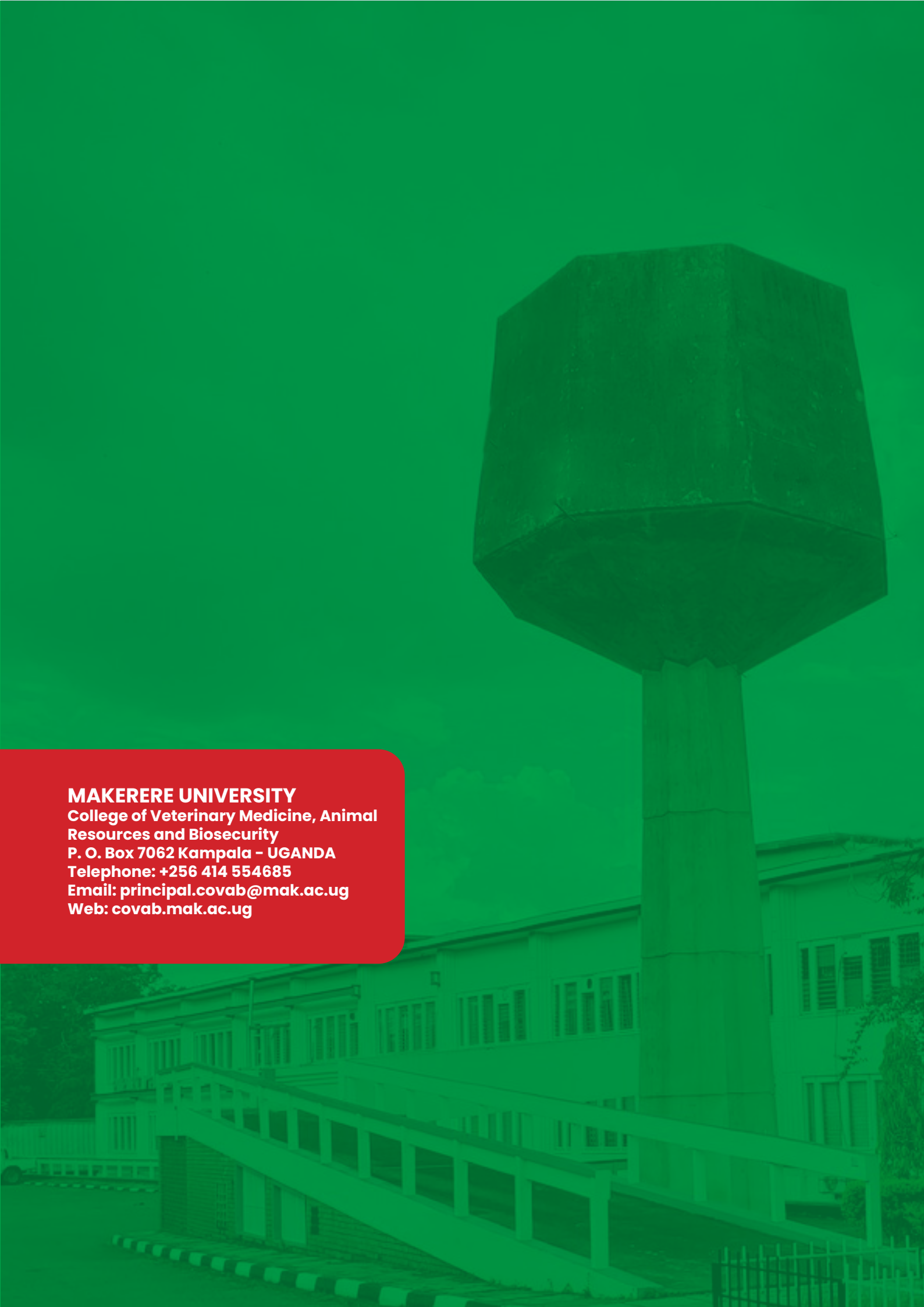

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