

Curriculum Vitae

Dr. Jesca Lukanga Nakavuma

Veterinarian, Senior Lecturer and Microbiologist

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Peer-reviewed journal articles 2019 -2021

1. Ssekatawa, K., Byarugaba, D.K., Kato, D.C., Wampande, E.M., Ejobi, F., Tweyongyere, R., and **Nakavuma, J.L.** (2021) A review of phage mediated antibacterial applications, *Alexandria Journal of Medicine*, **57**:1, 1-20, DOI: 10.1080/20905068.2020.1851441
2. Ssekatawa, K., Byarugaba, D.K., Nakavuma, J.L., Kato, C.D., Ejobi, F., Tweyongyere, R. and Wampande, E.M., 2020. Prevalence of Pathogenic Klebsiella Pneumoniae based on PCR Capsular Typing Harboured Carbapenemases Encoding Genes in Ugandan Tertiary Hospitals. (Pre-print) <https://doi.org/10.21203/rs.3.rs-125368/v1>
3. Kazibwe, G., Katami, P., Alinaitwe, R., Alafi, S., Nanteza, A. and **Nakavuma, J.L.**, 2020. Bacteriophage activity against and characterisation of avian pathogenic *Escherichia coli* isolated from colibacillosis cases in Uganda. *Plos ONE*, **15**(12), p.e0239107. <https://doi.org/10.1371/journal.pone.0239107>
4. Tebetyo, Z., Bogere, P., Nabulime, M. M., Kaaya, A. N., Gnonlonfin, B., Ntale, M., & **Nakavuma, J. L.** (2020). *In vitro* efficacy of two microbial strains and physicochemical effects on their aflatoxin decontamination in poultry feeds. *African Journal of Biotechnology*, **19**(9), 644-652. <https://doi.org/10.5897/AJB2020.17215>
5. **Nakavuma, J. L.**, Kirabo, A., Bogere, P., Nabulime, M. M., Kaaya, A. N., & Gnonlonfin, B. (2020) Awareness of mycotoxins and occurrence of aflatoxins in poultry feeds and feed ingredients in selected regions of Uganda. *International Journal of Food Contamination*, **7**: 1-10. <https://doi.org/10.1186/s40550-020-00079-2>
6. Wanzala, S.I., **Nakavuma, J.**, Travis, D., Kia, P., Ogwang, S., Waters, W.R., Thacker, T., Johnson, T., Hadi, S.A. and Sreevatsan, S. (2019) Retrospective Analysis of Archived Pyrazinamide Resistant *Mycobacterium tuberculosis* Complex Isolates from Uganda—Evidence of Interspecies Transmission. *Microorganisms*, **7**(8), p.221. <https://doi.org/10.3390/microorganisms7080221>
7. Kaddumukasa PP, Imathiu SM, Mathara JM, **Nakavuma J.L.** (2019) Bacterial contamination of selected fruits, fresh juice contact surfaces and processor's hands: Potential Risk for Consumers' health in Uganda. *Journal of Food Science and Nutrition Research*; **2** (3): 199-213; DOI: 10.26502/jfsnr.2642-11000020
8. Diaz, M., Kellingray, L., Akinyemi, N., Adefiranye, O., Olaonipekun, BA., Bayili, GR., Ibezim, J., du Plessis, A., Hounbédji, M., Kanya, D., Mukisa, IM., Mulaw, G., Manthi, SJ., Chienjo WO., Atter, A., Agbemafle, E., Annan, T., Ackah, NB., Buys, E., Hounhouigan, JD., Muyanja, C., **Nakavuma, J.**, Odeny, DA., Sawadogo-Lingani, H., Tefera, AT., Amoa-Awua, W., Obodai, M., Mayer, MJ., Oguntoyinbo, FA., and Narbad, A. (2019) Comparison of the microbial composition of African fermented foods using amplicon sequencing. *Scientific Reports, Nature Research*, <https://doi.org/10.1038/s41598-019-50190-4> Accepted 04/09/2019.
9. Kaddumukasa PP, Imathiu SM, Mathara JM, **Nakavuma J.L.** (2019) Socio-demographic characteristics of vendors and manufacturing practices of fresh

Grants and Fellowships

1. **Sept 2020 – June 2021:** Laboratory evaluation of selected phage isolates against prevalent fish bacterial pathogens for development of phage biocontrol agents for use in aquaculture in Uganda. Funded by COVID-19 RIF small grants – Government of Uganda/Makerere University (UGX 74,770,000/=) – Principal Investigator

Research team:

Dr. Jesca L Nakavuma (PI)¹; Dr. John K. Walakira²; Dr. Claire Mack Mugasa¹; Dr. Samuel Posian Wamala¹ and Mr. Deus Kamy¹

Collaborating Institutions

¹School of Biosecurity, Biotechnology and Laboratory Sciences, COVAB

²NARO - National Fisheries Resources Research Institute, Kajjansi

The research supplements the activities of an on-going AU project, at COVAB, MAK, which aims at developing phage products for integrated fish disease management. Phage isolation targets *Aeromonas* spp and *Edwardsiella* spp, which are the prevalent fish bacterial pathogens in Uganda. Phage product development requires prior comprehensive evaluation at laboratory level, a pre-requisite for on-station and on-farm studies. Hence, laboratory experiments are on-going to allow selection of the most efficient phage candidates for future on-station and on-farm evaluation before efficacious and safe phage cocktail products are produced. Well-characterised phage candidates and a phage biorepository are the expected outputs, while involvement of graduate and undergraduate students in this research will contribute to capacity building. One of the expected outcomes include availing two safe, efficacious and stable phage cocktails to feed into on-station and on-farm evaluation; while the impact will include extrapolation of phage application into other food production and safety systems for reduced use of antibiotics and hence mitigation of antimicrobial resistance in the aquaculture sector; and other animal food production systems in Uganda.

2. **June – Dec 2020:** Determination of cross species transmission of COVID-19 at animal human interface using one health approach for improved surveillance and control”. Funded by COVID-19 RIF small grants – Government of Uganda/Makerere University (UGX 59,976,000/=) –

Research team

Jesca Nakavuma, BVM, MSc, PhD (PI)¹; Joelia Nasaka¹ BSc, WHM, MSC, PhD scholar; Agnes Bwanika Naggirinya² MBChB, MSc, PhD scholar; Bukenya Stephen³ MBChB, MSc; Walter Okello¹ BLT; and Odur Solomon¹ BLS, MSc student

Collaborating Institutions

¹ COVAB, Makerere University

² Infectious Diseases Institute, Makerere University

³ WALIMU

The research aimed at assessing existence of SARS-CoV-2 in domestic and wild animals in Amuru/ Greater Rakai and UWEC as well as specific antibodies in humans with no history of infection, using a one health approach. The specific objectives included assessment of the (1) extent of exposure to SARS-CoV-2 in wild, livestock and companion animals, in Amuru and Kyotera districts, where community cases of COVID-19 in Uganda were first confirmed; and 2) prevalence of SARS-CoV-2 and specific antibodies in humans with no previous history of contact with COVID-19 cases. All samples from humans and animals were negative by RT-PCR. High IgG seropositivity among domestic (47.2%) and wild (61.5%) animals, while it was 31.9 % among humans, while 70% of the homesteads had at least one seropositive domestic animal. Circulating antibodies against SARS-CoV2 were detected in both humans and animals (both domesticated and wild), could have been due to previous exposure to the virus. This may point to cross-species transmission of the virus or reaction to other Corona viruses. More research is required to assess household with confirmed and active disease in order to follow-up cross species transmission of the virus.



Research findings feedback session at Kyotera District Production offices



Research Findings Feedback session to study participants and selected district official of Amuru held at Lamogi S/C headquarters on



Team at a Feedback seminar that was presented via zoom on Jan 11th 2021 at 3pm. Hajjat Joelia Nassaka (R); Dr. Jesca Nakavuma (C); Dr. Agnes Bwanika Naggirinya (L)

3. **Dec 22, 2018 – 2021:** Development of phage cocktails as disease biocontrol agents for improved aquaculture productivity, food and nutrition safety in Ghana and Uganda (AURG II-2-225-2018). Funded by European Union-African Union Research Grants (USD \$ 995,597.00) – Principal Investigator.

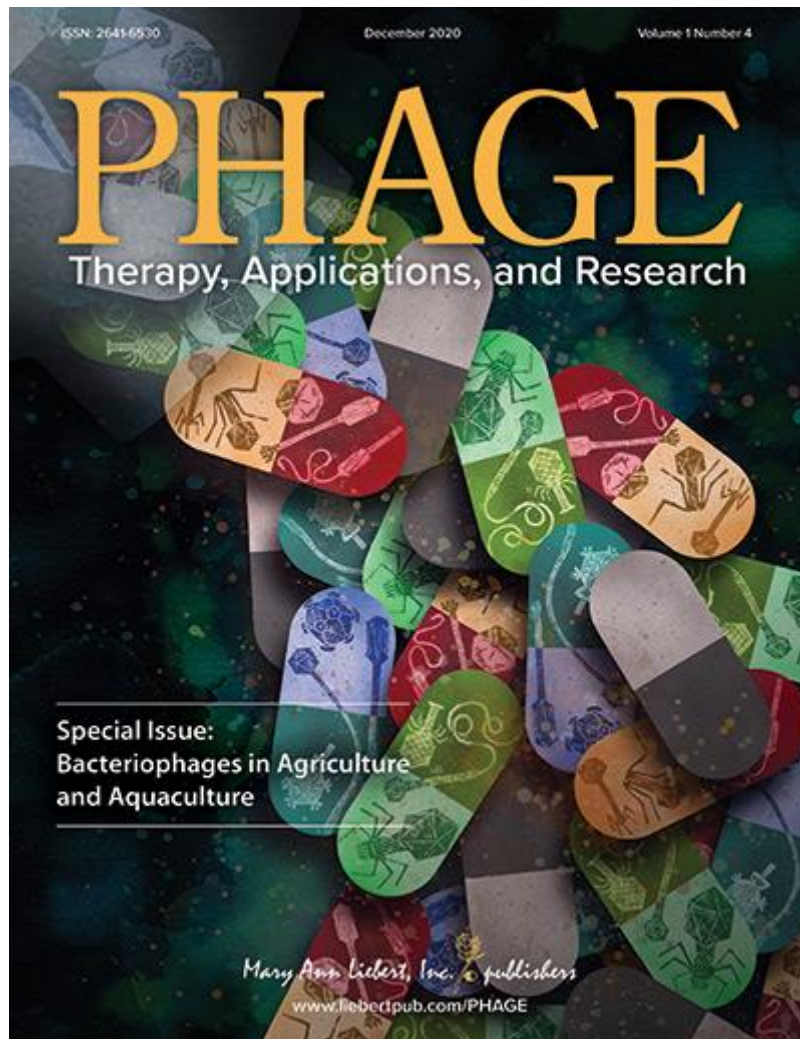
Conferences

Papers presented

1. **2019:** Building Capacity for Phage Application in management of livestock production diseases: AU Project on Tilapia disease management on aquaculture farms in Ghana and Uganda. A presentation at the 23rd Evergreen Phage Meeting held at Evergreen State College, Olympia, Washington State, USA, (4th – 9th August 2019)
2. **2019:** Phage Research Journey in Uganda. A presentation at the West African Phage Laboratory Training Workshop held at Kwame Nkrumah University of Science and Technology, Kumasi Ghana (18th July 2019)
3. **2019:** Exploring use of bacteriophages as alternatives to antibiotic use in poultry and aquaculture production in Uganda. Paper presented at the 2nd Global Network for Antimicrobial Resistance and Infection Prevention Symposium, Bugolobi Royal Suites, Kampala Uganda (March 4 -7, 2019)
4. **2019:** Fish disease management strategies for fish farmers – biocontrol option. CBS-POWESA trade fair, Wankulukuku, Kampala Uganda (16th – 23rd April 2019)

Membership to various bodies

1. Jan 2021 – Member of the International Committee on Taxonomy of Viruses - Bacterial Viruses Subcommittee
2. June 2020 – Team Leader MSc Biomedical Laboratory Science and Management curriculum review committee
3. 2020 – Senior Ambassador for Uganda – International Board of Ambassadors of International Society for Microbial Ecology
4. 2019 – Member Editorial Board PHAGE: Therapy Applications and Research. Mary Ann Liebert, Inc Publishers www.liebertpub.com/phage



5. Member of Implementation Committee - Makerere University Early-Career Academics Research Training: A Carnegie Corporation of New York Project
6. Member on Advisory Committee on Vaccines and Immunization; independent committee of Uganda National Academy of Scientists (UNAS); also serving as the Uganda National Technical Advisory Committee on Vaccines and Immunization, (UNITAG) 2015 – 2017, 2018 -