

## GRADUATES FLASH TALKS



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### #1 - What Makes Macrophages Mighty? Lessons from *Listeria*

*Listeria monocytogenes* is a foodborne zoonotic pathogen that causes life-threatening listeriosis in both humans and animals. In humans, it is particularly lethal to older adults(>64), pregnant women, newborns, and anyone with weakened immunity. Macrophages, as the first responders of the innate immune system, play a crucial role in controlling this infection. In our research, we studied deubiquitinase OTUD7b (Ovarian Tumor Domain-containing protein 7b) that regulates antimicrobial response & autophagy mechanism in macrophages, helping fight against *Listeria*. Interestingly, OTUD7b also plays an important role in tumor cell survival and cancer biology. Exploring the versatile role of OTUD7b in infectious and non-infectious contexts may deepen our knowledge of disease biology that can be translated to existing or new therapeutic strategies



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### #2 - Childhood Illness Beyond the Clinic: What Homes in Mozambique Reveal

Under-five mortality in Mozambique remains high, with infectious diseases as leading causes. We enrolled 1,055 febrile children (median age 20 months) at two rural health centres (July 2024–January 2025). Malaria (37.7%), fever without focus (23.7%), lower respiratory tract infection (13.9%), and gastrointestinal infection (9.9%) were most frequent. Household factors varied: unimproved toilets were linked to malaria and gastrointestinal cases, while electricity and media access were lowest in malaria but highest in LRTI households. Findings demonstrate strong household influences on childhood infections, underscoring the importance of One Health approaches for integrated child health strategies in rural Mozambique.



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### **#3 - Viruses in the wild: a metatranscriptomic approach to virus discovery in Australian marsupials**

Marsupials are an ancient and iconic Australian clade with a unique evolutionary history. Using metatranscriptomics - a powerful, unbiased RNA sequencing approach - I identified 11 novel across five marsupial species, including in three host species in which hepaciviruses had never been detected. Phylogenetic analysis revealed three distinct marsupial virus clades, suggesting a few ancient viral introductions followed by long-term host-virus co-divergence. These findings highlight the power of metatranscriptomics for wildlife virus discovery and underscore the importance of understanding deep-time virus-host evolution. In an era of biodiversity loss, expanding the wildlife is critical to predicting and mitigating emerging infectious disease risks under a One Health framework.



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### **#4 - Contingency Plans: A recipe for stronger animal disease preparedness and response in Africa**

Just like cooking recipes, contingency plans provide step-by-step guidance on how governments and Veterinary Services should respond to animal disease outbreaks. Despite their importance, many African countries struggle to implement these plans, mainly due to limited financial resources. In this flash talk, I'll explore the barriers faced by five countries: Algeria, Congo Republic, Kenya, Morocco, and Tanzania, in implementing their plans. Ensuring that contingency plans include local engagement, strong coordination, and political endorsement is essential to improving emergency preparedness and response, and turning a basic recipe into a 3-star Michelin dish.



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## **#5 - Wildlife, Water and Wheat - A non-invasive approach to pathogen screening.**

Over 60% of emerging infectious diseases are zoonotic, and approximately 70% of these originate from wildlife, highlighting the need for global screening of viral and bacterial pathogens. Collecting samples from wildlife can be difficult and often involves invasive methods, which can cause discomfort to both animals and humans. In this study, we used a non-invasive approach with wheat-supplemented water bins for longitudinal pathogen screening. We combined microbiological and molecular techniques - detecting antimicrobial resistance in bacterial pathogens using VITEK and Whole Genome Sequencing, screening Betacoronaviruses via polymerase chain reaction, and observing wildlife behaviour with camera traps. Therefore, we present this “magic bin” as a practical tool within a One Health research framework for non-invasive pathogen screening.



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## **#6 - The Attana QCM-based Lyme borreliosis test**

Can serology tell us more than simple detection of specific antibodies? What if a one-step serology method could also determine how strongly an antibody binds its target antigen?

The Attana Cell™ 250 system is a flow-based biosensor platform that utilises quartz crystal microbalance (QCM) technology, enabling detection and assessment of binding interactions between an immobilised molecule and a liquid-phase analyte in label-free real-time measurements. I used biosensors immobilised with the *Borrelia garinii* VlsE antigen to correctly distinguish known positive and negative patient serum samples. This project also revealed key traits of *Borrelia* antigens required for application in this biosensor platform.





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### **#7 - Improving food safety: lactic acid bacteria from Costa Rican cheese with potential antagonistic effects on *Salmonella* and *E. coli***

*Salmonella* and *E. coli* are known contaminants of food products, such as cheese. Pathogen growth in cheese can be prevented by bacteriocin-producing strains of lactic acid bacteria (LAB). However, there are not that many known bacteriocins effective against Gram-negative pathogens.

In Costa Rica, there are many artisans of cheese-making, therefore ensuring the microbiological quality of their products is essential. In this study, samples of a type of fresh Costa Rican cheese are examined for the presence of autochthonous LAB with antimicrobial effects. By investigating the cell-free supernatants, it was found that there is at least one strain with inhibitory effects against *E. coli*, suggesting the presence of a bacteriocin.



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### **#8 - Recent eco-epidemiological findings on West Nile virus in Guadeloupe**

West Nile virus (WNV) is a zoonotic vector-borne pathogen amplified between wild birds and mosquitoes. In 2024, it emerged in Guadeloupe with unusual clinical cases. To investigate its eco-epidemiology and reinforce active surveillance, we conducted field studies in spring 2025 across five outbreak sites. Serological analysis of 294 birds revealed 6.5% seroprevalence, identifying the Carib Grackle as a potential amplifying host and the Common Ground Dove as a sentinel species. A parallel canine survey showed 36.7% seroprevalence. These findings highlight the role of resident birds in local WNV cycles and highlights the utility of dogs as sustainable WNV sentinels.