Zoonotic Virus Transmission and One Health

Meeting report of the 3rd jGfV Workshop on “One Health and Zoonotic Viruses” in Berlin, Germany, 15-16 October 2025.

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Group photo of all participants of the 3rd jGfV workshop on “One Health and Zoonotic Viruses” in Berlin, Germany, 15-16 October 2025.

The “One Health and Zoonotic Viruses” working group of the Society for Virology (GfV) held its annual meeting on 15–16 October 2025 at the Hotel Berlin in Berlin. This year's workshop was organized as a satellite event of the “International One Health Symposium”, which took place at the same venue in the preceding days. The aim of our workshop was to connect young scientists with experts from various disciplines, promote interdisciplinary discussion, and share the latest research findings in the field of zoonoses. A total of 23 participants from Germany, Austria,

Switzerland, and Ghana attended the workshop, which was entitled “Zoonotic Virus Transmission and One Health”. All researchers presented their findings from the fields of virology, immunology, medicine, and epidemiology in 12-minute presentations, followed by short discussions. To do justice to the thematic diversity of the projects presented, the presentations were divided into three sessions: “Host Factors & Antivirals”, “Epidemiology”, and “Immunity”.

In the first session, “Host Factors & Antivirals”, new insights on host factors, antiviral mechanisms and virus-host interactions were presented. Topics included studies on MxA-mediated host restriction of zoonotic influenza A viruses and their role in formation of pandemic viruses, the partial resistance of bat-derived H9N2 viruses to the antiviral factor MxA, and how Chikungunya virus infection infections are facilitated by the cellular host factor CD81. Other presentations highlighted the pathogenesis of the Lassa virus in human cells, the course of infection of different Lassa virus strains in *Mastomys natalensis*, the role of TMPRSS2 and other host cell proteases in highly pathogenic respiratory viruses, as well as the antiviral potential of cyclosporin A against Nipah viruses, and the identification of new antiviral factors using CRISPR screening. Using pseudotyped VSV, researchers from Ulm developed a novel approach to inhibit viral entry processes and specifically eliminate infected cells. These contributions emphasized the variety of molecular mechanisms influencing viral infections and highlighted innovative strategies for developing antiviral interventions providing both basic research and translational benefits for preventing zoonoses.

The evening of the first day was devoted to informal networking over a joint dinner at a brewery, providing an opportunity to strengthen existing professional relationships and forge new scientific collaborations between the junior researchers.

The second day began with a keynote lecture by Prof. Dr. Marcel Müller from the Charité – Universitätsmedizin Berlin on the topic of “MERS Coronavirus: A One Health Challenge”. In his presentation, Marcel shared the latest research findings on MERS coronaviruses, discussing their origin, circulation and adaptation mechanisms within North African camel populations.

Chris Hoffmann from the Bernhard Nocht Institute presenting his insights into the virus-host interaction of Lassa viruses in their natural *Mastomys natalensis* host reservoir.

The subsequent “Epidemiology” session featured a variety of presentations on the latest work in surveillance, molecular epidemiology, and virus diversity of zoonotic pathogens. Studies from Ghana focused on SARS-CoV-2 and other respiratory viruses in urban and rural areas, zoonotic viruses in wild and farmed animals, and the circulation of the Marburg virus in wild caught bats. These studies provided valuable insights into pathogen reservoirs, transmission routes, and serological responses. Additionally, researchers from Switzerland presented metagenomic analyses of viral diversity in resident and migratory birds, as well as in the ticks these birds harbor, underlining the significance of avian hosts in virus transmission. Together, these contributions illustrated the significant role of ecological, geographical, and behavioral factors in the emergence and spread of zoonoses.

In the final session of the jGfV Workshop designated to research projects on “Immunity”, current findings on the

interaction between viruses and the host immune system, as well as immune responses following infection and vaccination, were presented. Topics included the tissue-specific tropism and innate immune response to mpox virus infections, the role of type I interferon in the non-lytic clearance of avian influenza A viruses in mouse models, and the immune escape strategies of porcine coronaviruses. Other presentations examined the replication of H5N1 viruses isolated from the utter of cattle compared to the 2009 pandemic H1N1 virus of human origin in the human nasopharynx cultures. Additionally, new findings on humoral and cellular immune responses following vaccination and infection were presented. These included the breadth of S2-specific antibodies following MERS and SARS-CoV-2 vaccination, the epitope-specific $CD8^+$ T-cell response following MVA-MERS-S vaccination, and the longevity of T-cell responses to CCHFV and NSDV in sheep. The session concluded with a presentation on the integration of vector behavior and transcriptomics in ticks and the Harz Mountain virus. All talks highlighted how the strong interconnection of the fields of virology, immunology, and bioinformatics can improve our understanding of virus-host interaction mechanisms and the effectiveness of vaccination strategies. They also provided important impetus for future One Health approaches to the prevention of zoonoses.

The lively discussions during both sessions highlighted the great interest in interdisciplinary perspectives and the relevance of One Health approaches for understanding, preventing and controlling such diseases. This year's meeting concluded with a productive and inspiring discussion on future perspectives and an engagement on collaborative efforts.

Nico Becker, a postdoctoral researcher at Philipps University of Marburg, particularly stood out. He won this year's “jGfV Best Speaker Award” with his presentation, “Targeting Nipah virus: The Antiviral Potential of Cyclosporine A”. The jGfV presents a small prize of 100 € and a special jGfV trophy to the workshop participants who rate the best presentation.

Nico Becker from the Philipps University Marburg was awarded with the best speaker award at the jGfV “One Health and Zoonotic Viruses” workshop. From the left to the right: Kevin Ciminski, Nico Becker, Lisa Oestereich.

Finally, the organizers of the jGfV working group on “One Health and Zoonotic Viruses”, Kevin Ciminski and Lisa Oestereich, are thankful to all participants, speakers and supporters, especially the GfV and the CRC1648 (“Emerging Viruses: Pathogenesis, Structure, Immunity“), and look forward to the next meeting in 2026.