Dr. Maksym Kitsera — Research Summary and Selected Scientific Publications

Research Summary

Dr. Maksym Kitsera is a molecular microbiologist and virologist with expertise in host–pathogen interactions, bacterial toxins, emerging viral diseases, and translational biomedical research. His scientific work spans microbiology, virology, infection biology, organoid systems, animal models, and molecular diagnostics. During his PhD research at Karl-Franzens-University Graz, Dr. Kitsera focused on the quantitative and functional characterization of the enterotoxins tilimycin and tilivalline produced by Klebsiella oxytoca. His work contributed to the understanding of how microbiota-derived genotoxins influence intestinal pathology, mutagenesis, and antibiotic resistance development. At the Bernhard Nocht Institute for Tropical Medicine in Hamburg, Dr. Kitsera expanded his work into virology and emerging infectious diseases, including SARS■CoV■2, Yellow Fever Virus (YFV), Rift Valley Fever Virus (RVFV), and hantaviruses. His work involved viral isolation, titration, sequencing, organoid infection models, and preclinical studies. Dr. Kitsera has extensive experience in BSL■2 and BSL■3 laboratory environments and contributes to translational biomedical research integrating microbiology, virology, molecular biology, and AI-assisted preventive healthcare systems.

Main Research Areas

- Molecular microbiology and bacterial toxins
- Virology and emerging infectious diseases
- SARS■CoV■2 and tropical virus research
- Host–pathogen interactions
- Organoid and stem-cell-based infection models
- Animal models in infection biology
- Genotoxicity and mutagenesis
- Molecular diagnostics and translational medicine
- AI-assisted preventive healthcare systems

Selected Scientific Publications

1. Kitsera M, Brunetti JE, Rodríguez E. Recent Developments in NSG and NRG Humanized Mouse Models for Their Use in Viral and Immune Research. Viruses. 2023;15(2):478. doi:10.3390/v15020478

2. Pöltl L, Kitsera M, Raffl S, et al. Microbiota-derived genotoxin tilimycin generates colonic stem cell mutations. Cell Reports. 2023;42(3):112199. doi:10.1016/j.celrep.2023.112199

3. Kienesberger S, Cosic A, Kitsera M, et al. Enterotoxin tilimycin from gut-resident Klebsiella promotes mutational evolution and antibiotic resistance in mice. Nature Microbiology. 2022;7(11):1834–1848. doi:10.1038/s41564-022-01260-3

4. Glabonjat RA, Kitsera M, Unterhauser K, et al. Simultaneous quantification of enterotoxins tilimycin and tilivalline in biological matrices using HPLC high-resolution ESMS2 based on isotopically 15N-labeled internal standards. Talanta. 2021;222:121677. doi:10.1016/j.talanta.2020.121677

5. Brunetti JE, Kitsera M, Muñoz-Fontela C, Rodríguez E. Use of Hu-PBL Mice to Study Pathogenesis of Human-Restricted Viruses. Viruses. 2023;15(1):228. doi:10.3390/v15010228

6. Unterhauser K, Pöltl L, Schneditz G, et al. Klebsiella oxytoca enterotoxins tilimycin and tilivalline have distinct host DNA-damaging and microtubule-stabilizing activities. PNAS. 2019;116(9):3774–3783. doi:10.1073/pnas.1819154116

7. Greimel TM, Unterhauser K, Farkas AM, et al. Toxin-Producing Klebsiella oxytoca in Healthy Infants. Journal of Pediatric Gastroenterology and Nutrition. 2022;74(1):e1–e7. doi:10.1097/MPG.0000000000003299

Dr. Maksym Kitsera combines expertise in microbiology, virology, molecular biology, and translational biomedical sciences with a growing focus on artificial intelligence applications in healthcare and preventive medicine.