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Broad-Spectrum Antiviral Drug Discovery for Emerging RNA Viruses

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The continuous emergence of RNA viruses, including flaviviruses, coronaviruses, and enteroviruses, has highlighted the urgent need for broad-spectrum antiviral therapies capable of responding to newly emerging pathogens before vaccines become available. This presentation discusses recent advances in antiviral drug discovery, focusing on small-molecule inhibitors that target viral replication and host cellular pathways essential for infection. Particular attention will be given to high-throughput drug screening platforms, medicinal chemistry, and structure-based drug design that have accelerated the identification of promising antiviral candidates.

Recent progress in understanding viral replication complexes and host-virus interactions has enabled researchers to develop antiviral compounds with activity against multiple virus families. The presentation will review preclinical and clinical studies evaluating novel antiviral agents, combination therapies, and host-directed therapeutic strategies. Advances in artificial intelligence-assisted drug discovery and computational biology are further transforming the development of effective antiviral treatments.

The session concludes by discussing future perspectives on pandemic preparedness, emphasizing the integration of antiviral therapeutics, vaccine platforms, and global surveillance systems to improve responses to future viral outbreaks.

Biography

Johan Neyts is Professor of Virology at KU Leuven, Belgium. His research focuses on antiviral drug discovery, emerging RNA viruses, and medicinal virology. He has led numerous international collaborations developing innovative antiviral therapies for dengue, Zika, chikungunya, and coronavirus infections.