VIROCON 2025

Session Themes and Subthemes

BASE THEME : PANDEMIC PREPAREDNESS & RESPONSE - CHALLENGES AND SOLUTIONS

Session theme

One Health and Pandemic Preparedness

- Climate change, global warming, cross-species transmission and emergence of viral disease
- Surveillance of viruses in wild reservoirs (bats, rodents, birds, zoo animals)
- Viral ecology in aquatic, plant and soil systems
- Wastewater surveillance and syndromic surveillance
- Biosafety, biosecurity and risk assessment
- Multi-sectoral integrated disease surveillance systems linking human, animal, and plant health
- Rapid diagnostics and mobile technologies
- Data Science, AI and disease modeling to predict the future pandemic

Session theme

Public health and agricultural resilience

- Epidemiology and community-based strategies for outbreak response
- Clinical and translational Virology
- Emergence of vector-borne viral diseases
- Viral threats to food crops, livestock and fisheries and early warning systems
- Building resilient agri-health systems

Session theme

Innovators' interface – Role of academia, industry, startups & future leaders

Bridging Innovation Pipelines: Academia, Industry, Incubators, and Emerging Talent

BASE THEME : COUNTERMEASURES DEVELOPMENT - INNOVATIONS FOR RESPONSE

Session theme: Diagnostics	**Session theme: Vaccines**	**Session theme: Therapeutics**
• Conventional diagnostic assays for antigen and antibody detection, and Prognostic biomarkers • Lateral flow assays, CRISPR-based detection, biosensors based rapid point of care tests • PCR, next-generation sequencing, metagenomic approaches and AI-powered diagnostic interpretation	• Conventional inactivated and live-attenuated vaccines • mRNA, viral vector, protein subunit, DNA-based platforms • Vaccine adjuvants and AI-driven antigen prediction • Health technology assessments and regulatory requirements for vaccine development	• Small molecule inhibitors and natural products • High-throughput screening, drug repurposing, AI-assisted design • RNA- based and antibody-based therapeutics • Antiviral drug resistance: Host-targeted vs virus-targeted strategies

BASE THEME : BASIC VIROLOGY FOR RESEARCH AND DEVELOPMENT		
Session theme **Virus replication, evolution and genetic diversity** • Molecular mechanisms of viral entry, replication, assembly, and egress • Virus Discovery and Metaviromics: Pan-virome approaches and high-throughput sequencing • Phylogenomics and virome diversity • Reverse genetics, pseudoviruses, Organoid and animal/plant models • CRISPR and other genome editing tools in virology research • Determinants of viral virulence and pathogenesis	**Session theme** **Host-virus interactions** • Systems virology (OMICS), CRISPR and functional genomics in host-virus studies • Virus-host interactions at the cellular and molecular level • Host genetic susceptibility and viral disease outcomes • Epigenetic regulation of virus replication	**Session theme** **Viral Immunology** • Innate Immune Sensing and Antiviral Defenses • Adaptive Immunity to Viruses • Immunopathology and Viral Disease Outcomes • Virus immune evasion strategies • Immune Responses in Plant–Virus Interactions