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Accelerating Vaccine Innovation for Emerging Infectious Diseases: From Discovery to Global Accessibility

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The emergence of highly pathogenic viruses over the past two decades has demonstrated the urgent need for rapid, affordable, and globally accessible vaccine technologies. This presentation explores advances in vaccine development for emerging infectious diseases, including coronavirus infections, neglected tropical diseases, and zoonotic viral pathogens. Particular attention will be given to recombinant protein vaccines, innovative adjuvant formulations, and scalable manufacturing strategies capable of supporting rapid pandemic responses. The presentation also discusses lessons learned during the COVID-19 pandemic regarding vaccine research, regulatory approval pathways, technology transfer, and equitable global distribution.

Recent developments in antigen engineering, structural vaccinology, and immunoinformatics have significantly improved vaccine efficacy while reducing development timelines. These innovations are complemented by international collaborations between academic institutions, governments, biotechnology companies, and public health organizations that facilitate faster clinical evaluation and emergency deployment.

The session will further examine vaccine hesitancy, public confidence, and strategies to improve immunization coverage through evidence-based communication. Finally, future perspectives on universal vaccines, next-generation delivery systems, and pandemic preparedness frameworks will be presented, emphasizing the importance of global scientific cooperation to reduce the burden of emerging infectious diseases.

Biography

Peter J. Hotez is a renowned physician-scientist and Dean of the National School of Tropical Medicine at Baylor College of Medicine, USA. His research focuses on vaccine development for neglected tropical diseases and emerging viral infections. He has authored hundreds of scientific publications and is internationally recognized for his contributions to vaccinology, global health, and pandemic preparedness. He is a frequent keynote speaker at leading international scientific conferences.