



ISWAVLD 2023

International Symposium of the World
Association of Veterinary Laboratory
Diagnosticians

29 JUNE-1 JULY
2023
Congress Centre
Lyon

Towards
the veterinary
diagnostics
of the
future

Main topic :

High throughput sequencing-based diagnostics - what is possible today?

BEER M.¹

¹ *Institute Of Diagnostic Virology, Friedrich-Loeffler-Institut, Greifswald-Insel Riems, Germany*

High-throughput sequencing (HTS or next-generation sequencing, NGS) has become a modern tool increasingly used in diagnostics, both in human and veterinary medicine. In addition to the pure generation of whole genomes (whole-genome sequencing, WGS), as in the case of SARS-CoV-2, influenza viruses or whole bacterial or parasite genomes, one of the main achievements of the new technology is the non-directed search for genetic pathogen components. This allows diagnostic measures to be carried out without suspecting a special pathogen and also allows completely new, previously unknown pathogens to be characterized. This method of metagenomic diagnostics is still costly, but is becoming a standard procedure due to improved sequencing and analysis performance and is e.g. the basis of virus discovery.

In order to further increase the performance, especially the sensitivity, these methods are increasingly optimized with amplification techniques and enrichment of target genomes via so-called DNA or RNA "baits". In this process, pathogens or resistance genes are specifically enriched, thus markedly increasing the success of the detection. This can then also be used specifically for individual groups of pathogens to optimize the sequence depth or in the analysis of wastewater samples. During the lecture, the latest techniques and possibilities with a focus on virus diagnostics will be presented and discussed.