



Molecular Biomarkers for Viral Infection

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Message from the Guest Editor

Molecular biomarkers have emerged as invaluable tools in the diagnosis and management of viral infections, offering insights into disease progression, treatment efficacy, and prognosis. Several molecular agents may serve as biomarkers, such as nucleic acids, proteins, and metabolites. Importantly, their presence or alteration is crucial for the host's immune response. Nucleic acid-based biomarkers, like viral RNA or DNA, provide direct evidence of viral replication within host cells, enabling sensitive detection through techniques like PCR or next-generation sequencing. Additionally, host gene expression profiles offer insights into immune responses and viral pathogenesis, providing important data for disease severity prediction. Protein biomarkers, including viral antigens or host immune factors, serve as indicators of active infection, aiding in early diagnosis and in monitoring treatment response. Furthermore, metabolomic signatures reflect the dynamic interplay between the virus and host metabolism, offering potential targets for therapeutic intervention and personalized medicine approaches.





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