

Special Issue

Advances in Molecular Biology Methods in Hepatology Research, 2nd Edition

Message from the Guest Editors

Recent advances in molecular and cellular biology have significantly impacted hepatology research, enhancing our understanding of liver function and disease development. These advancements help identify novel therapies, drugs, and reduce drug toxicity. The integration of genomic technologies like next-generation sequencing (NGS), single-cell sequencing, CRISPR-Cas9, and epigenetic studies allows for a more comprehensive analysis of the liver's genomic landscape. Progress in single-cell proteomics, such as mass spectrometry and high-throughput proteomics, enables the identification of liver proteins at the cellular level, aiding in the study of liver injury, fibrosis, and regeneration. Additionally, advancements in hepatic in vivo models and liver tissue engineering, including CRISPR-Cas9, have led to the creation of humanized organoid models for high-throughput screening. These models replicate cellular interactions and provide insights into liver diseases like MASLD, hepatitis, and liver fibrosis. Generating patient-derived organoids helps personalize disease models and develop precision therapeutics, enhancing diagnosis, treatment, and prevention of hepatic diseases.

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