

Global Human Liver Model Market Size study, by Product (2D Models, 3D Models), by Application (ADME Studies, Toxicology Testing, Disease Modelling, Others), by End-use (Academic & Research Institutes, Pharmaceutical & Biotechnology Companies, Contract Research Organizations) and Regional Forecasts 2022-2030

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Abstracts

The global Human Liver Model market is valued at USD 1.19 billion in 2023 and is anticipated to grow at a compound annual growth rate (CAGR) of 13.8% over the forecast period 2024-2030, reaching a market value of USD 3.19 billion by 2030. Human liver models are sophisticated in vitro and in vivo systems designed to replicate the structural and functional aspects of the human liver. These models have gained immense importance in pharmaceutical research, disease modeling, and regenerative medicine. They offer accurate simulations of liver responses, which are critical for preclinical drug testing, reducing the need for human trials, and enabling more effective research into liver diseases.

The growth of the human liver model market is primarily driven by the increasing demand for reliable, human-relevant drug testing models. Traditional animal models often fail to predict human responses, making human liver models a preferred alternative for pharmaceutical companies aiming to enhance drug efficacy and safety profiles. Additionally, the rising prevalence of liver diseases, including non-alcoholic fatty liver disease (NAFLD) and liver cancer, has further fueled demand for advanced research models to better understand these conditions and develop therapeutic interventions.

Advancements in bioengineering and 3D bioprinting technologies represent a key opportunity for market expansion. These innovations allow for the development of more complex and functional liver models that closely mimic actual human liver structures. The adoption of 3D models in preclinical research improves disease modeling, drug metabolism studies, and toxicity testing, providing pharmaceutical companies and researchers with enhanced tools for drug development.

Despite the promising growth outlook, the market faces challenges due to the high costs associated with advanced human liver models. Technologies such as organ-on-chip platforms and 3D bioprinting are capital-intensive, limiting their accessibility, particularly for smaller research organizations.

North America held the largest market share in 2023, accounting for 41.76% of the revenue. This dominance is attributed to a robust healthcare infrastructure, strong research and development activities, and a favorable regulatory environment supporting advanced technologies like human liver models for preclinical drug testing. The Asia Pacific region, however, is expected to grow at the fastest rate during the forecast period, driven by increasing liver disease prevalence and substantial investments in healthcare infrastructure, particularly in countries like China, Japan, and India.

Major market players included in this report are:

ATCC

Merck KGaA

AcceGen

ZenBio, Inc.

Organovo Holdings Inc.

BioIVT

InSphero

Emulate, Inc.

Mimetas

CN Bio Innovations Ltd

The detailed segments and sub-segment of the market are explained below:

By Product

2D Models

3D Models

By Application

ADME Studies

Toxicology Testing

Disease Modelling

Others

By End-use

Academic & Research Institutes

Pharmaceutical & Biotechnology Companies

Contract Research Organizations

By Region

North America

U.S.

Canada

Europe

UK

Germany

France

Spain

Italy

ROE (Rest of Europe)

Asia-Pacific

China

India

Japan

Australia

South Korea

RoAPAC (Rest of Asia-Pacific)

Latin America

Brazil

Mexico

Rest of Latin America

Middle East & Africa

Saudi Arabia

South Africa

RoMEA (Rest of Middle East & Africa)

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