+357 96 030922
info@marketpublishers.com

In Vitro Lung Models Market Size and Forecast (2021 - 2031), Global and Regional Share, Trend, and Growth Opportunity Analysis Report Coverage: By Type (3D Model and 2D Model), Application (Drug Discovery and Toxicology Studies, Physiological Research, Regenerative Medicine, and Others), End User (Pharmaceutical and Biotechnology Companies, Academic and Research Institutes, and Others), and Geography

https://marketpublishers.com/r/IBFA64BFB4D5EN.html
Date: June 2025
Pages: 231
Price: US$ 4,450.00 (Single User License)
ID: IBFA64BFB4D5EN

Abstracts

The In Vitro lung models market size is projected to reach US$ 1,530.11 million by 2031 from US$ 446.35 million in 2024. The market is estimated to register a CAGR of 19.4% during 2025–2031. Major factors driving the market growth include a surging prevalence of respiratory diseases and the rising adoption of in vitro models as an alternative to animal testing. Further, Applications of 3D cultures and AI in oncology is likely to boost the market during the forecast period. However, lack of skilled professionals are among the market deterrents.

According to a report published by the Global Initiative on Chronic Obstructive Lung Disease, ~65 million people suffer from obstructive pulmonary disease (COPD), and nearly 3 million people die from the disease each year, making it the fourth leading cause of mortality worldwide. According to the 2023 American Lung Association data, ~34 million Americans were affected by chronic lung diseases such as asthma and COPD. In 2022, ~11.7 million adults, or 4.6% of the population in the US, were diagnosed with COPD. As per an article published in the European Respiratory Journal in 2020, 36.58 million Europeans were reported to have COPD, which is projected to

+357 96 030922
info@marketpublishers.com

reach 49.45 million by 2050, representing a 35.2% relative increase. With the growing prevalence of smoking in developing countries and the aging population in high-income countries, the COPD prevalence is projected to rise over the next forty years. As per the World Health Organization (WHO) estimates, COPD will become one of the leading causes of death worldwide by 2030, and it is estimated that by 2060, there will be more than 5.4 million deaths yearly due to COPD and related conditions.

Therefore, respiratory diseases is spurring the demand for advanced research models to understand disease mechanisms and develop effective treatments.

In vitro lung models, such as precision-cut lung slices (PCLS), allow the study of airway constriction and inflammation, facilitating the evaluation of novel therapeutic targets for asthma and other respiratory conditions. Lung-on-a-chip devices have been developed to replicate the physiological conditions of the human lung. The University of Michigan's "lung-on-a-chip" device uses human lung-tissue cells cultured on a plastic chip with microscopic channels to simulate the conditions inside the lungs, providing new insights into diseases. Thus, the increasing demand for effective treatments and research models fuels the growth of the in vitro lung model market.

Moreover, two-dimensional (2D) cell cultures, or monolayers, are widely used in cellular biology to study diseases and for drug screening due to their cost-effectiveness, high throughput, easy replication, and results interpretation. However, they fall short in replicating the complex network of dynamic interactions present in the three-dimensional tumor microenvironment (TME) of living patient tumors. This aspect limits their ability to model cancer behavior and drug responses, as well as to isolate and maintain cancer cell lines from patient biopsies in 2D cultures. Traditional 2D cell cultures, while foundational, fall short in replicating the intricate TME and cellular interactions that characterize lung cancers in vivo. As cancer research advances, an increasing number of animals are being utilized in the creation of animal models. These animals include mice, rats, and other similar species. However, animal models exhibit low success rates in translating preclinical findings into effective clinical treatments; this has raised concerns about their reliability as predictors of human responses. To address these limitations, research is shifting toward more physiologically relevant human in vitro models (3D cell culture models)—such as spheroids, organoids, tumoroids, and microfluidic systems—that better mimic the TME, gene expression, and drug responses observed clinically. These models are critical for validating drug efficacy and improving preclinical testing, especially in lung cancer research. Integrating 3D models in drug screening is essential to validate findings from 2D cultures and assess the effects of anticancer drugs. Such approaches have proven to be fruitful for cancer

+357 96 030922
info@marketpublishers.com

drug screening and are emerging as a pivotal tool in shaping the future of lung cancer research and therapeutic development. The use of 3D cell culture models in lung cancer pharmacology research represents a paradigm shift in the approach toward understanding and treating lung diseases.

The comparative company analysis evaluates and categorizes the in vitro lung models market based on product portfolio (product satisfaction, product features, and availability), recent market developments (merger & acquisition, new product launch & enhancement, investment & funding, award, agreement, collaboration, & partnership, recognition, and expansion), and geographic presence that aids better decision-making and understanding of the competitive landscape. The report profoundly explores the recent significant developments and innovations by the leading vendors in the global in vitro lung models market. The key market players are MatTek Corp, Lonza Group AG, Emulate, Inc, CN Bio Innovations Ltd, PromoCell GmbH, Charles River Laboratories International Inc, MIMETAS BV, InSphero AG, Organovo Holdings Inc, Draper, Inc, Epithelix, AlveoliX AG, and American Type Culture Collection (ATCC).

Based on type, the market is divided into 3D Models and 2D Models. The 3D Models segment held the largest In Vitro Lung Model Market share in 2024, and it is expected to register the highest CAGR during 2024–2031.

3D lung models replicate the complex architecture and cellular interactions of human lung tissue accurately. The enhanced physiological relevance makes them invaluable for drug discovery, toxicity testing, and disease modeling. The primary types of 3D lung models include spheroids, organoids, and precision-cut lung slices (PCLS). In 3D models, cells are cultured within a three-dimensional structure, offering advantages over traditional 2D models. These models closely replicate the architecture and microenvironment of the lung, enabling accurate simulation of physiological conditions. As a result, drug and therapeutic studies using 3D models tend to yield more accurate and reliable results than those derived from 2D models or animal models.

By application, In Vitro Lung Model market is segmented into drug discovery and toxicology studies, physiological research, regenerative medicine, and others. The drug discovery and toxicology studies segment held the largest share of the in vitro lung model market in 2024.

Per end user, In Vitro Lung Model market is segmented into pharmaceutical and biotechnology companies, academic and research institutes, and others. The pharmaceutical and biotechnology companies segment held the largest share of the In

+357 96 030922
info@marketpublishers.com

Vitro lung model market in 2024.

Various organic and inorganic strategies are adopted by companies operating in the in vitro lung models market. The organic strategies mainly include product launches and product approvals. Inorganic growth strategies witnessed in the market are acquisitions, collaboration, and partnerships. These growth strategies allow the market players to expand their businesses and enhance their geographic presence, along with contributing to the overall market growth. Furthermore, strategies such as acquisitions and partnerships helped strengthen their customer base and extend their product portfolios. A few of the significant developments by key players in the in vitro lung models market are listed below.

In September 2024, MatTek Life Sciences, a biotech company specializing in the development of in vitro human tissues, announced the licensing of its organotypic human tissues to CellEx, a life science laboratory based in China. This strategic collaboration marks a milestone in the advancement and utilization of human tissues for research, pharmaceutical development, and safety assessment applications.

In June 2023, Emulate, Inc., a provider of next-generation in vitro models, announced the launch of the Emulate Chip-A1 Accessible Chip through an early access program. This new Organ-Chip design expands on the original Chip-S1—which models tissue-vascular interfaces with relevant biomechanical forces such as stretch and flow—by allowing users to create thicker tissues within the epithelial culture chamber and apply additional drug treatment options, including topical or aerosolized applications.

Reason to buy

Save and reduce time carrying out entry-level research by identifying the growth, size, leading players, and segments in the in vitro lung models market.

Highlights key business priorities in order to assist companies to realign their business strategies.

The key findings and recommendations highlight crucial progressive industry trends in the global invitro lung models market, thereby allowing players across the value chain to develop effective long-term strategies.

Develop/modify business expansion plans by using substantial growth offering developed and emerging markets.

+357 96 030922
info@marketpublishers.com

Scrutinize in-depth global market trends and outlook coupled with the factors driving the market, as well as those hindering it.

Enhance the decision-making process by understanding the strategies that underpin security interest with respect to client products, segmentation, pricing and distribution.

The List of Companies - In Vitro Lung Models Market

MatTek Corp

Lonza Group AG

Emulate, Inc

CN Bio Innovations Ltd

PromoCell GmbH

Charles River Laboratories International Inc

MIMETAS BV

InSphero AG

Organovo Holdings Inc

Draper, Inc

Epithelix, AlveoliX AG

American Type Culture Collection (ATCC)

+357 96 030922
info@marketpublishers.com

Contents

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

10. IN-VITRO LUNG MODEL MARKET – GEOGRAPHICAL ANALYSIS

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

List Of Tables

LIST OF TABLES

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

List Of Figures

LIST OF FIGURES

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

I would like to order

Product name: In Vitro Lung Models Market Size and Forecast (2021 - 2031), Global and Regional Share, Trend, and Growth Opportunity Analysis Report Coverage: By Type (3D Model and 2D Model), Application (Drug Discovery and Toxicology Studies, Physiological Research, Regenerative Medicine, and Others), End User (Pharmaceutical and Biotechnology Companies, Academic and Research Institutes, and Others), and Geography

Product link: https://marketpublishers.com/r/IBFA64BFB4D5EN.html

Price: US$ 4,450.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/IBFA64BFB4D5EN.html