

Asia Pacific In-Vitro Lung Model Market Size and Forecast (2021 - 2031)

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Abstracts

The Asia Pacific in vitro lung model market is projected to grow significantly, reaching an estimated US\$ 322.2 million by 2031, up from US\$ 92.2 million in 2024. This growth represents a compound annual growth rate (CAGR) of 19.7% from 2025 to 2031, driven by increasing incidences of respiratory diseases and a shift towards ethical research practices.

Executive Summary and Market Analysis

The market is segmented into key countries including China, Japan, India, South Korea, Australia, and the Rest of Asia Pacific. The high prevalence of respiratory conditions such as asthma in these countries is a major factor driving the demand for advanced research tools like in vitro lung models. The growing burden of respiratory diseases necessitates innovative solutions for research and drug development, which in vitro models can provide.

Moreover, there is a notable shift towards ethical research practices across the region. Countries like China and Japan are implementing stricter regulations on animal testing, which encourages the adoption of alternative testing methods such as in vitro models. This regulatory environment is conducive to the growth of the in vitro lung model market, as researchers and companies seek to comply with these new standards while still advancing their research capabilities.

The market is also benefiting from the presence of numerous research organizations dedicated to improving lung care solutions. Countries such as Australia, India, and South Korea are expected to present significant growth opportunities due to the increasing adoption of advanced technologies, including organoids and organ-on-chips.

These technologies are gaining traction as they offer more accurate representations of human physiology compared to traditional 2D cultures, thus enhancing the reliability of research outcomes.

In addition, increased government funding and private investments are bolstering research and development in biomedical sciences. These financial resources are crucial for the advancement of in vitro lung models, facilitating innovation and accelerating drug discovery processes. For instance, Emulate, a biotechnology company specializing in Organs-on-Chips technology, raised US\$ 82 million in a Series E funding round in September 2021, highlighting the confidence in organ-on-chip platforms for drug testing and disease modeling.

Market Segmentation

The Asia Pacific in vitro lung model market is segmented by type, application, and end user:

By Type: The market is divided into 3D Models and 2D Models, with 3D Models holding the largest market share in 2024.

By Application: The applications include Drug Discovery and Toxicology Studies, Physiological Research, Regenerative Medicine, and Others, with Drug Discovery and Toxicology Studies being the leading segment in 2024.

By End User: The end users are categorized into Pharmaceutical and Biotechnology Companies, Academic and Research Institutes, and Others, with Pharmaceutical and Biotechnology Companies dominating the market share in 2024.

Market Outlook

In vitro lung models are increasingly recognized for their ability to simulate human lung physiology more accurately than traditional methods. This advancement has attracted significant investments from both public and private sectors. For example, Newcells Biotech, a UK-based startup, secured US\$ 1.60 million in funding in December 2024 to develop advanced in vitro models for drug discovery, including 3D tissue models that replicate human organs.

The National Centre for the Replacement, Refinement, and Reduction of Animals in Research (NC3Rs) is also playing a pivotal role in promoting the development of in vitro models to replace animal testing. Recent funding initiatives include a project aimed at developing a human 3D lung organoid model using fetal lung tissue, which aims to enhance the understanding of lung development and therapeutic screening.

Country Insights

By country, China is the largest market for in vitro lung models in the Asia Pacific region. The aging population in China is contributing to a rise in chronic illnesses, including respiratory diseases. A study indicated that the proportion of individuals aged 60 and above in China is expected to increase significantly, leading to a higher demand for effective treatments for chronic respiratory conditions.

China's investment in alternative testing methods, including in vitro lung models, is also noteworthy. The National Medical Products Administration (NMPA) has facilitated a shift towards accepting non-animal testing data, which has reduced the reliance on animal testing and spurred market growth as researchers seek more ethical and efficient testing platforms.

Key Players

The Asia Pacific in vitro lung model market features several key players, including Charles River Laboratories, Lonza Group, Merck KGaA, and Emulate, among others. These companies are employing various strategies such as expansion, product innovation, and mergers and acquisitions to enhance their market presence and offer innovative solutions to their customers.

In conclusion, the Asia Pacific in vitro lung model market is poised for substantial growth, driven by the increasing prevalence of respiratory diseases, regulatory changes favoring ethical research practices, and significant investments in research and development. The market presents promising opportunities for companies in the healthcare and biotechnology sectors.

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