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Organ-on-a-Chip Market, 2022-2035: Focus on Products and Technologies - Distribution by Type of Product (Organ(s)-based Models and Disease(s)-based Models), Organ Type (Liver on a Chip, Heart on a Chip, Lung on a Chip and Other Organ on a Chip), Application Area (Cancer Research, Drug Discovery and Toxicity Testing, Stem Cell Research and Tissue Engineering and Regenerative Medicine), Purpose (Research and Therapy Development), and Key Geographical Regions (North America, Europe, Asia-Pacific and Rest of the World): Industry Trends and Global Forecasts

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Abstracts

The global organ-on-a-chip market is anticipated to grow at a CAGR of 21% during the forecast period 2022-2035.

It's widely recognized that a significant portion, around 90%, of therapeutic treatments fail during clinical trials, leading to substantial economic losses in the pharmaceutical industry. One major reason for these failures is the inability to accurately predict how drugs will affect humans during the early stages of development. Relying on animal testing often falls short in predicting human reactions to drugs and identifying potential toxicities. Not only are these clinical trials expensive and time-consuming, but they also raise ethical concerns. To address these challenges, a crucial step was taken in 2021 with the introduction of the FDA Modernization Act in the United States, supported by

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both Democratic and Republican factions. This legislative initiative aimed to reform the drug approval process by advocating for the use of non-animal testing methods in early evaluations. Additionally, the U.S. Environmental Protection Agency (EPA) has announced its intention to stop funding studies involving mammals by 2035. As a result, many pharmaceutical companies are now modernizing their traditional testing methods to overcome the limitations associated with animal models.

Among the innovative technologies gaining momentum, the 'organ-on-chip' system stands out as a promising solution poised to transform the drug discovery process. This advanced technology replicates the human physiological and functional environment within a microfluidic system. The adoption of such cutting-edge testing models for drug discovery and genotoxicity assessments has been steadily increasing, indicating significant market growth in the global organ-on-a-chip sector for the foreseeable future.

Report Coverage

The report conducts an analysis of the organ-on-a-chip market, examining organ type, application area, purpose, and key geographical regions.

It assesses factors impacting market growth, including drivers, restraints, opportunities, and challenges.

The report evaluates potential advantages and hurdles within the market, providing insights into the competitive landscape for top market players.

Revenue forecasts are provided for market segments across four major regions.

Organ-on-Chip technology signifies a significant advancement in biomedical research, emulating human organ functions on miniature devices. Its evolution since the early 2000s has seen continuous refinement and innovation, offering precise simulation of organ functions, reproducibility, and potential for high-throughput studies. However, challenges related to complexity and scalability exist. Applications span diverse areas like drug discovery, disease modeling, and personalized medicine. Future prospects indicate sustained growth in adoption and advancements, impacting various healthcare and research sectors.

A comprehensive market analysis involves examining chips, plates, and systems categorized by organ or disease models. This includes evaluating

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development status, technology platforms, chip construction materials, compatible tissues/organs, and application areas across research domains such as cancer, drug discovery, stem cell research, and tissue engineering. Notable companies engaged in Organ-on-Chip development, categorized by establishment year, size, and headquarters location, are integral to this analysis.

Detailed profiles of commercialized Organ-on-Chip entities in North America, Europe, and Asia-Pacific offer insights into company overviews, product portfolios, recent advancements, and future prospects. These profiles detail their contributions, ongoing developments, and anticipated trajectory in the field.

A comprehensive review of Organ-on-Chip patents filed/granted until 2022 includes analysis on patent types, issuing authorities, organizational involvement, patent characteristics, geographical distribution, and comprehensive patent valuation.

Brand positioning analysis assesses the market perception of major industry players based on factors like manufacturer experience, product diversity, technological innovations, patent publications, and overall market positioning.

An exploration of grants awarded to research institutes involved in Organ-on-Chip projects between 2017 and 2022 covers grant details, funding bodies, focus areas, recipient organizations, and geographical distribution.

An analysis of partnerships established since 2017 among companies focused on developing Organ-on-Chip products and technologies covers various collaboration types, including research agreements, clinical trials, technology integration, and commercialization.

A study on investments covers funding rounds, debt financing, IPOs, and subsequent offerings at different development stages for start-ups/small companies and mid-sized companies dedicated to Organ-on-Chip technologies.

A detailed examination of scaffold-free 3D cell culture products encompasses various products, developmental status, system types, fabrication materials, and their applications in research and pharmaceutical testing.

Key Market Companies

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BEOnchip

Dynamic42

Emulate

Mimetas

SynVivo

TissUse

uFluidix

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