Mice Model Technologies Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Technology (CRISPR Knockout, Random Insertions, Large and Targeted Insertions, ES Cell Modification (Homologous Recombination), Others), By End Users (Pharmaceutical Companies, Biotechnology Companies, Academic and Research Facilities, Contract Research And Manufacturing Organizations), By Region, By Competition, 2019-2029F

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Abstracts

Global Mice Model Technologies Market was valued at USD 1.22 Billion in 2023 and is anticipated to project robust growth in the forecast period with a CAGR of 10.23% through 2029.The mice model technology market is experiencing growth propelled by increased investments in research and development within the pharmaceutical biotechnology sector. Additionally, the utilization of mice models for personalized drug production is contributing to market expansion. The rising demand for mice models in the production of monoclonal antibodies further fuels market growth. However, the continuous discovery of substitute approaches for animal studies may restrain the global mice model technologies market during the forecast period.

Key Market Drivers

Rising Demand for Personalized Medicine

The growing demand for personalized medicine is expected to drive significant growth in the Global Mice Model Technologies Market. As the healthcare sector moves towards more personalized treatment approaches, mice models become crucial for preclinical research and drug development. These genetically engineered models, designed to mimic human conditions, enable researchers to gain deeper insights into disease mechanisms and identify targeted therapies. In the realm of personalized medicine, which tailors treatment plans based on an individual's genetic profile, sophisticated research tools like mice models are essential. The increasing adoption of precision medicine strategies fuels the demand for genetically modified mice, facilitating intricate studies on the efficacy and safety of new therapeutics. Moreover, the pharmaceutical and biotechnology sectors increasingly rely on mice models to streamline drug discovery processes, improving the efficiency of bringing new drugs to market. With the rising momentum towards personalized healthcare, the Global Mice Model Technologies Market is poised for substantial growth, driven by the indispensable role these models play in advancing the understanding and development of personalized medicine.

Growing Focus on Drug Discovery and Development

The growing emphasis on drug discovery and development is expected to drive the expansion of the Global Mice Model Technologies Market. In the dynamic pharmaceutical and biotechnology industries, mice models serve as critical assets for accelerating the drug development process. Their genetic resemblance to humans enables researchers to simulate and analyze human diseases, providing crucial insights into the efficacy and safety of potential drug candidates. The increasing demand for innovative therapeutics, along with the necessity for rapid and cost-effective drug discovery, underscores the indispensable role of mice models. Genetically modified mice facilitate the study of disease mechanisms, aiding in the identification of promising drug targets and the evaluation of new compounds. The efficiency gains achieved through mice models in preclinical research significantly contribute to expediting the overall drug development process. As the global healthcare industry intensifies its efforts to advance treatment modalities, the reliance on mice models for comprehensive preclinical studies becomes paramount. Consequently, the Global Mice Model Technologies Market is poised for substantial growth, driven by the pivotal role these models play in enhancing the efficiency and success rates of drug discovery and development initiatives.

Advancements in Genetic Engineering Techniques

The surge in advancements in genetic engineering techniques is set to drive the growth of the Global Mice Model Technologies Market. As state-of-the-art genetic engineering tools evolve, researchers gain unprecedented precision and efficiency in modifying mouse genomes for scientific investigations. This progress enables the creation of more sophisticated and relevant mice models that closely mimic human physiological conditions, proving invaluable in pharmaceutical and biotechnological research. Cutting-edge techniques like CRISPR-Cas9 have revolutionized the precision and speed with which genetic modifications can be introduced into mice, facilitating the development of highly targeted models for specific diseases. The ability to replicate human genetic mutations in mice enhances the translatability of research findings to human applications, bolstering the reliability of preclinical studies in drug development. The scalability and cost-effectiveness of these advancements further contribute to their widespread adoption, making genetically engineered mice more accessible to a broader spectrum of researchers and industries. As genetic engineering techniques continue to progress, their pivotal role in tailoring mice models to meet the demands of intricate biomedical research positions the Global Mice Model Technologies Market for substantial growth, fostering innovation and accelerating breakthroughs in various therapeutic areas.

Key Market Challenges

Ethical Considerations and Animal Welfare Concerns

Ethical considerations and heightened animal welfare concerns present significant challenges that could impede the growth of the Global Mice Model Technologies Market. As societal awareness and ethical standards evolve, there is an increasing scrutiny on the use of animals in research, including mice models. Ethical considerations surrounding the humane treatment of animals and the potential for suffering during experimentation may lead to regulatory restrictions and public opposition, hindering the market's growth. Stricter regulations and ethical guidelines may necessitate more rigorous approval processes, delaying research timelines and increasing costs for companies involved in mice model technologies. Additionally, concerns about the moral implications of genetic modifications and the use of animals for scientific purposes may lead to a decline in social acceptance, impacting the industry's social license to operate. Organizations in the mice model sector must proactively address these ethical concerns, emphasizing transparency, responsible animal care practices, and adherence to stringent ethical guidelines. Failure to address these concerns may not only hinder market growth but also pose reputational risks for companies operating in this space. A delicate balance between scientific advancement

and ethical responsibility is essential to navigate these challenges and sustain the long-term viability of the Global Mice Model Technologies Market.

High Costs and Resource Intensiveness

The growth of the Global Mice Model Technologies Market faces a notable hindrance due to the dual challenges of high costs and resource intensiveness associated with these advanced research tools. Establishing and maintaining colonies of genetically modified mice require significant financial investments in specialized facilities, housing, and veterinary care. The intricate nature of genetic engineering techniques and the demand for specific mouse models contribute to the resource-intensive nature of this research. The high upfront costs for creating and maintaining mice colonies, coupled with the ongoing expenses of skilled personnel and sophisticated equipment, may act as a deterrent for smaller research institutions and companies with limited financial resources. Moreover, the time-intensive nature of developing and characterizing genetically modified mice extends research timelines, further impacting overall operational efficiency. As the industry strives to balance scientific innovation with economic considerations, addressing cost and resource challenges becomes imperative for sustained market growth. Collaborative efforts, technological advancements aimed at cost reduction, and strategic resource optimization will be essential for mitigating these barriers. Failure to navigate the cost and resource intensiveness may impede widespread adoption and accessibility, limiting the potential expansion of the Global Mice Model Technologies Market.

Key Market Trends

Rapid Advancements in Genetic Engineering

The rapid advancements in genetic engineering constitute a pivotal driver propelling the growth of the Global Mice Model Technologies Market. Breakthroughs in techniques such as CRISPR-Cas9 have revolutionized the precision, speed, and cost-effectiveness of manipulating mouse genomes, facilitating the creation of highly sophisticated and disease-relevant models. This acceleration in genetic engineering capabilities enables researchers to replicate human genetic conditions in mice with unprecedented accuracy, enhancing the translatability of preclinical findings to human applications.

The agility afforded by these advancements enables quicker development of diverse mouse models tailored to specific research needs, particularly in the fields of pharmaceuticals and biotechnology. Researchers can now expedite the exploration of

novel drug targets, study disease mechanisms more comprehensively, and streamline the drug development pipeline. As genetic engineering technologies continue to evolve, fostering an environment of innovation and efficiency, the Global Mice Model Technologies Market is poised for robust growth. The ability to engineer mouse genomes aligns rapidly and precisely with the demands of an increasingly dynamic biomedical research landscape, positioning these technologies as indispensable tools for accelerated advancements in therapeutic discovery and development.

Focus on Immunodeficient and Humanized Mice Models

The strategic focus on immunodeficient and humanized mice models is a driving force propelling the growth of the Global Mice Model Technologies Market. Immunodeficient mice, lacking a functional immune system, and humanized mice, genetically modified to express human genes or immune components, have become indispensable in preclinical research. These models play a crucial role in assessing the safety and efficacy of novel therapeutics, particularly in the context of human immune responses. Pharmaceutical and biotechnology industries are increasingly relying on immunodeficient and humanized mice models to conduct more accurate and predictive preclinical studies. The ability of these models to mimic human physiological conditions closely enhances the reliability of research outcomes, particularly in the development of immunotherapies, vaccines, and personalized medicine.

The heightened demand for these specialized mice models is a direct response to the growing complexity of drug development and the need for more clinically relevant research tools. As the healthcare industry intensifies its focus on precision medicine and targeted therapies, the Global Mice Model Technologies Market is poised for substantial growth, driven by the indispensable role that immunodeficient and humanized mice models play in advancing the understanding and development of cutting-edge biomedical solutions.

Segmental Insights

Technology Insights

Based on the Technology, the CRISPR Knockout technology segment is anticipated to witness substantial market growth throughout the forecast period. The ascent of CRISPR Knockout technology stands as a key driver propelling the growth of the Global Mice Model Technologies Market. CRISPR, an innovative genome editing tool, has revolutionized the precision and efficiency with which genetic modifications are

introduced into mouse genomes. This breakthrough technology allows researchers to selectively 'knock out' specific genes, creating genetically modified mice with targeted genetic alterations that mimic human diseases more accurately. The speed and cost-effectiveness of CRISPR Knockout technology have significantly accelerated the generation of customized mice models, reducing both research timelines and associated costs. The tool's versatility enables researchers to swiftly develop mouse models for a wide array of diseases, providing a robust platform for preclinical research in pharmaceuticals and biotechnology. As the demand for more sophisticated and disease-relevant mice models continues to grow, CRISPR Knockout technology emerges as a cornerstone in meeting these evolving research needs. Its transformative impact on genetic manipulation not only expedites drug development processes but also enhances the precision and predictive value of preclinical studies. Thus, the Global Mice Model Technologies Market is poised for substantial growth, driven by the unparalleled capabilities and efficiencies afforded by CRISPR Knockout technology in advancing biomedical research and therapeutic discovery.

Regional Insights

North America, specifically the Mice Model Technologies Market, dominated the market in 2023, primarily due to North America is poised to drive substantial growth in the Global Mice Model Technologies Market. North America's dominance in the global mice model technologies market is supported by robust infrastructure, well-established biotechnology and pharmaceutical industries, and extensive research and development activities. The presence of leading biotech and pharmaceutical companies, particularly in the United States, drives the demand for advanced mice models for drug discovery and development purposes. The region benefits from a progressive regulatory environment that encourages biomedical research, fostering innovation and the use of mice models in experiments. Additionally, North America's concentration of top-tier research institutions and academic centers contributes to the widespread adoption of cutting-edge mice model technologies. Collaborations between academia and industry stakeholders, alongside substantial investments in genetic engineering and CRISPR-Cas9 technologies, highlight North America's significant role in shaping the market landscape. With a growing focus on personalized medicine and precision therapeutics, the demand for specialized and genetically engineered mice models is expected to increase in the region.

Key Market Players

Biocytogen LLC

Charles River Laboratories Inc.

Cyagen Biosciences

GemPharmatech Co Ltd.

genOway S.A.

Ingenious Targeting Laboratory Inc.

Merck KGaA.

Ozgene Pty Ltd.

Taconic Biosciences Inc.

Polygena AG

Report Scope:

In this report, the Global Mice Model Technologies Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

·Mice Model Technologies Market,By Technology:

oCRISPR Knockout

oRandom Insertions

oLarge and Targeted Insertions

oES Cell Modification (Homologous Recombination)

oOthers

·Mice Model Technologies Market,By End User:

oPharmaceutical Companies

oBiotechnology Companies

oAcademic and Research Facilities

oContract Research and Manufacturing Organizations

·Mice Model Technologies Market, By Region:

North America

United States

Canada

Mexico

Europe

France

United Kingdom

Italy

Germany

Spain

Asia-Pacific

China

India

Japan

Australia

South Korea

South America

Brazil

Argentina

Colombia

Middle East Africa

South Africa

Saudi Arabia

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Mice Model Technologies Market.

Available Customizations:

Global Mice Model Technologies market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

·Detailed analysis and profiling of additional market players (up to five).

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