Animal Biotechnology Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028 Segmented By Product Type (Diagnostics Tests, Vaccines, Drugs, Reproductive and Genetic, Feed Additives), By Application (Diagnosis of Animal Diseases, Treatment of Animal Diseases, Preventive Care of Animals, Drug Development, Others), By Animal Type (Companion, Livestock), By End-use (Laboratories, Point-of-care testing/In-house Testing, Veterinary Hospitals & Clinics, Others), By Region, and By Competition

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Abstracts

Global Animal Biotechnology Market has valued at USD 22.70 billion in 2022 and is anticipated to project impressive growth in the forecast period with a CAGR of 9.33% through 2028. The global animal biotechnology market is a rapidly growing sector within the biotechnology industry, focused on applying biotechnological techniques to improve the health, productivity, and genetics of animals. This market encompasses various applications, including animal cloning, genetic engineering, genomics, and reproductive technologies, with a primary focus on livestock, companion animals, and research animals.

Key Market Drivers

Increasing Global Demand for Protein

In a world with a rapidly growing population and changing dietary preferences, the demand for protein is on the rise like never before. This surge in global protein consumption has profound implications for the food and agriculture industries, leading to an increased reliance on innovative technologies. Among these technologies, animal biotechnology is emerging as a key player in meeting the growing demand for high-quality protein sources.

The world's population is expected to reach 9.7 billion by 2050. With more mouths to feed, the demand for protein is expected to increase significantly. As incomes rise, especially in developing countries, people tend to consume more protein-rich diets. Meat consumption, in particular, tends to increase with income levels. Rapid urbanization often leads to a shift in dietary habits, with urban dwellers typically consuming more protein-rich and processed foods. Growing awareness of the health benefits of protein, such as muscle maintenance and weight management, further fuels demand.

Animal biotechnology allows for precise genetic modification and selective breeding to create animals with improved growth rates, meat quality, and disease resistance. This results in more efficient and productive livestock. By introducing genetic traits that enhance disease resistance, animal biotechnology reduces the need for antibiotics in animal agriculture, contributing to food safety and sustainability. Genetic modifications and breeding techniques can lead to animals that produce more milk, meat, or eggs, increasing overall productivity and meeting the rising protein demand. Sustainable protein production is a global concern. Animal biotechnology offers opportunities to breed livestock that have a lower environmental footprint, reducing the strain on natural resources. Transgenic animals engineered through animal biotechnology can produce valuable biopharmaceuticals in their milk or blood, providing a cost-effective and scalable source of therapeutic proteins. Genomic tools enable precision breeding, allowing farmers and breeders to make informed decisions about mating pairs, resulting in animals with superior genetic traits.

Advancements in Genetic Engineering

Advancements in genetic engineering have propelled the field of animal biotechnology into a new era of innovation and possibility. This transformative technology has the potential to revolutionize animal agriculture, improve human and animal health, and address sustainability challenges.

Genetic engineering, also known as genetic modification or genetic manipulation,

involves precise alteration of an organism's DNA to achieve specific traits or characteristics. In the context of animal biotechnology, this means introducing targeted genetic changes in animals to enhance their traits, productivity, and resistance to diseases.

Recent developments like CRISPR-Cas9 technology have revolutionized genetic engineering. They provide scientists with precise tools to modify an animal's DNA, allowing for rapid and highly accurate genetic modifications. This level of precision accelerates the development of desirable traits. Genetic engineering enables the creation of animals with improved resistance to diseases, thereby reducing the need for antibiotics and enhancing overall animal welfare. This aligns with the growing consumer demand for sustainable and responsible animal farming practices. Genetic modifications can boost the productivity of livestock. For example, animals can be engineered to grow faster, produce more milk or eggs, or yield higher-quality meat. This increased efficiency addresses the global need for greater food production. Transgenic animals can be engineered to produce valuable therapeutic proteins and antibodies in their milk or blood. This biopharmaceutical production method is more cost-effective and scalable than traditional methods, contributing to market growth. Genetic engineering allows for the customization of animals to meet various market demands. Producers can create animals tailored to specific traits, producing diverse proteins, and accommodating different industry needs.

Genetic engineering enhances the efficiency of breeding programs, leading to increased productivity and economic advantages for farmers and producers. This fosters market growth by improving profitability. Genetic engineering opens up new avenues for research in agriculture, biomedicine, and beyond. This attracts investment in R&D, promoting innovation within the animal biotechnology sector. As awareness of the potential of genetic engineering in animal biotechnology grows, investment and research efforts are expanding worldwide. This global expansion drives competition and innovation within the market.

Precision Breeding and Genomics

Precision breeding and genomics represent two powerful pillars of innovation in the realm of animal biotechnology. These cutting-edge technologies are revolutionizing the way animals are bred, managed, and optimized for traits such as productivity, disease resistance, and environmental sustainability.

Precision breeding, also known as genomic selection, involves leveraging genomic data

to make informed breeding decisions. This technology allows breeders and researchers to select animals with specific genetic traits for reproduction, improving the efficiency and precision of breeding programs. Genomics is the study of an organism's entire genetic makeup, or genome. In the context of animal biotechnology, genomics provides insights into an animal's genetic composition, enabling scientists to identify and manipulate genes responsible for desired traits.

Precision breeding expedites the breeding process by identifying animals with superior genetic traits more quickly and accurately than traditional methods. This accelerates the development of high-performing livestock, meeting the ever-growing global demand for animal-derived products. By selecting animals with genes associated with traits such as rapid growth, increased milk production, or improved meat quality, precision breeding leads to higher productivity and greater economic benefits for farmers and producers. Genomics enables the identification of genes linked to disease resistance. This information can be used to breed animals with enhanced resistance to common diseases, reducing the need for antibiotics and improving animal welfare. Precision breeding and genomics contribute to more sustainable agriculture. By selecting animals with lower environmental footprints, such as reduced methane emissions, the industry can address concerns about the environmental impact of animal agriculture. These technologies offer flexibility in customizing animals to produce different types of proteins to meet varying market demands. This diversification of protein sources enhances the industry's ability to cater to evolving consumer preferences.

By streamlining breeding programs and improving the quality of selected animals, precision breeding and genomics contribute to increased efficiency and cost savings, making animal agriculture more economically viable. The adoption of these technologies encourages investment in research and innovation within the animal biotechnology sector. This fosters the development of new techniques, applications, and products. As awareness of the potential benefits of precision breeding and genomics grows, investment and research efforts are expanding globally. This global expansion drives competition and stimulates innovation within the market.

Biopharmaceutical Production

Biopharmaceutical production, a groundbreaking application of animal biotechnology, is emerging as a pivotal driver of growth in the global animal biotechnology market. This innovative approach harnesses the capabilities of genetically engineered animals to produce valuable therapeutic proteins and antibodies for medical and pharmaceutical purposes.

Biopharmaceutical production involves the genetic modification of animals, typically livestock, to produce biologically active compounds, including therapeutic proteins, antibodies, and vaccines. These genetically modified animals serve as living bioreactors, producing high-value pharmaceuticals in their milk, blood, or other bodily fluids.

Biopharmaceutical production offers a cost-effective and scalable alternative to traditional biomanufacturing methods. It eliminates the need for expensive infrastructure and equipment, making it an attractive option for pharmaceutical companies seeking to reduce production costs. Genetically engineered animals can produce large quantities of therapeutic proteins and antibodies, ensuring a consistent and reliable supply. This is crucial for meeting the growing demand for biopharmaceuticals. Animals designed for biopharmaceutical production can be bred to produce specific proteins quickly. This rapid turnaround time is vital for responding to urgent medical needs, such as the production of vaccines during pandemics. Biopharmaceutical production can be tailored to specific therapeutic proteins and antibodies, allowing for the production of a wide range of medicines. This customization caters to diverse medical needs. Compared to traditional biomanufacturing processes that rely on cell cultures, animal-based biopharmaceutical production can have a lower environmental footprint. This aligns with the growing demand for sustainable pharmaceutical production.

The use of genetically modified animals for biopharmaceutical production can boost the economies of countries that embrace this technology. It fosters innovation and attracts investment in research and development. Biopharmaceutical production enhances the pharmaceutical industry's ability to develop and produce a wide range of medicines, including rare and specialized therapies. This contributes to medical advancements and improved patient care. As awareness of the potential benefits of biopharmaceutical production grows, investment and research efforts are expanding globally. This global expansion drives competition and stimulates innovation within the animal biotechnology market.

Key Market Challenges

Public Perception and Acceptance

The public's perception of animal biotechnology can greatly influence its acceptance and adoption. Concerns about genetically modified organisms (GMOs) and the ethical treatment of animals can lead to skepticism and resistance, impacting the market's

growth.

Environmental Impacts

The genetic modifications made to animals can affect not only their biology but also their interactions with the environment. Controlling the ecological consequences of genetically modified animals and addressing concerns about potential harm to ecosystems is a challenge.

Intellectual Property Rights

Intellectual property rights related to genetically modified animals, especially when it comes to novel traits or genes, can lead to disputes and legal challenges. The need to protect intellectual property can create barriers to market entry.

Key Market Trends

CRISPR-Cas9 Revolution

CRISPR-Cas9 technology is poised to continue revolutionizing the animal biotechnology market. This powerful gene-editing tool enables precise modifications in animal genomes, offering the potential to create animals with enhanced traits, from disease resistance to improved product quality.

Alternative Protein Sources

The rising interest in alternative protein sources, including plant-based and cell-based options, will challenge the traditional animal agriculture sector. Animal biotechnology can play a role in developing more efficient and sustainable production methods for these emerging protein sources.

Consumer Transparency and Traceability

Consumers are becoming more conscious of the origin and production methods of animal-derived products. As a result, there will be a growing demand for transparency and traceability in the supply chain, which can be facilitated through biotechnology.

Segmental Insights

Product Type Insights

Based on the category of Product Type, it's noteworthy that the vaccines category secured the largest share of revenue in the year 2022. This significant growth in the vaccine sector can be primarily attributed to the escalating prevalence of animal infections. These infections are naturally transmitted from animals to humans, often due to the consumption of contaminated food and water or direct contact with infected individuals or animals. Vaccination stands out as a highly effective means of reducing the disease burden in animals, playing a pivotal role in preventive healthcare and disease management. Furthermore, the segment is expected to be propelled by the increased introduction of vaccines for animals by key market players. For instance, in December 2021, Indian Immunologicals Ltd. launched the Goat Pox Vaccine (Raksha Goat Pox), while in May 2021, Boehringer Ingelheim India unveiled its poultry vaccine, VAXXITEK HVT+IBD. Such product launches are poised to drive the adoption of vaccines, fostering further growth in this segment.

In the forecast period, the diagnostics tests sector is projected to experience remarkable growth. The expansion of this segment can be attributed to several factors, including the surge in expenditure on animal health, an increase in the incidence of zoonotic diseases, a growing number of veterinary practitioners, and rising disposable income levels in developing regions. Additionally, a comprehensive understanding of the demand for these products from veterinary hospitals, clinics, laboratories, and similar institutions, along with increased research and development investments from industry players, plays a significant role in shaping the overall market landscape. As a notable example, in August 2021, INDICAL BIOSCIENCE GmbH acquired Checkpoints, a Dutch research and development-focused company. INDICAL is a global leader in the advancement of comprehensive solutions for molecular and immunological veterinary testing.

Application Insights

In 2022, the segment dedicated to the preventive care of animals emerged as the leader in terms of revenue, mainly due to the increasing adoption of companion animals. A significant contributor to this revenue growth is the trend of pet humanization, where pet owners increasingly consider their pets as integral family members. This trend is underscored by an international survey conducted by HABRI and Zoetis, which highlights a direct connection between the human-animal bond and consistent veterinary care. The study, encompassing participants from the United States, France, the United Kingdom, Spain, Germany, Japan, Brazil, and China,

demonstrates a global phenomenon of strengthened emotional bonds between humans and their pets. In fact, a striking 95% of respondents expressed that they view their pets as part of their family. Consequently, this deepening human-animal bond fosters better preventive care practices.

In the coming forecast period, the application related to drug development is expected to experience substantial growth. The utilization of monoclonal antibodies in the field of animal health has opened up significant potential to address unmet needs. As an illustrative example, in September 2021, Boehringer Ingelheim and Invetx announced a collaborative agreement to develop innovative, species-specific monoclonal antibody biotherapeutics targeting a wide range of infections in veterinary species, with a primary focus on dogs and cats. This partnership underscores Boehringer Ingelheim's commitment to addressing unmet demands in the rapidly expanding animal health biotechnology market.

Regional Insights

In 2022, North America secured the largest portion of revenue, primarily due to its elevated levels of animal awareness and the improved healthcare infrastructure in the region. The presence of healthcare programs and a growing number of initiatives aimed at promoting animal health are factors that are expected to further enhance growth prospects in this geographical area. Additionally, the substantial investment in research and development (R&D) in North America is poised to contribute to market expansion. Notably, in October 2021, Zoetis Inc. expanded its manufacturing and development facility in Tullamore, Ireland, significantly increasing its capacity for the production of veterinary monoclonal antibodies.

On the other hand, the Asia Pacific market is projected to experience the most rapid growth during the forecast period. This growth can be attributed to several key factors, including the increasing number of middle-class households, rising disposable incomes, a growing acceptance of pet animals, the introduction of new products, and a high demand for animal proteins in the region. In June 2022, India introduced its first COVID-19 vaccine for animals, Anocovax, which marks a significant development in the market. Furthermore, the Agriculture Minister of India launched the 'CAN-CoV-2 ELISA kit,' a specific nucleocapsid protein-based indirect ELISA kit for the detection of antibodies against SARS-CoV-2 in canines, indicating a commitment to advancing animal healthcare in the region.

Key Market Players

Zoetis Inc

Boehringer Ingelheim GmbH

Biogenesis Bago SA

Merck & Co., Inc.

Virbac SA

Elanco LLC

IDEXX Laboratories Inc

Heska Corp

Indian Immunologicals Ltd

Hester Biosciences Limited

Report Scope:

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

Animal Biotechnology Market, By Product Type:

Diagnostics Tests

Vaccines

Drugs

Reproductive and Genetic

Feed Additives

Animal Biotechnology Market, By Application:

Diagnosis of Animal Diseases

Treatment of Animal Diseases

Preventive Care of Animals

Drug Development

Others

Animal Biotechnology Market, By Animal Type:

Companion

Livestock

Animal Biotechnology Market, By End-use:

Laboratories

Point-of-care testing/In-house Testing

Veterinary Hospitals & Clinics

Others

Animal Biotechnology Market, By Region:

North America

United States

Canada

Mexico

Europe

Germany

United Kingdom

France

Italy

Spain

Asia-Pacific

China

Japan

India

Australia

South Korea

South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

Kuwait

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Animal Biotechnology Market.

Available Customizations:

Global Animal Biotechnology market report with the given market data, Tech Sci 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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