

Genome Engineering Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Technology (CRISPR, TALEN, ZFN, Antisense, Others), By Delivery Method (Ex-Vivo v/s In-Vivo), By Application (Cell Line Engineering, Genetic Engineering, Diagnostic Applications, Drug Discovery & Development, Others), By End User (Pharmaceutical & Biotechnology Companies, Academic & Research Institutions, Others), By Region & Competition, 2021-2031F

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Report description:

Market Overview

The Global Genome Engineering Market will grow from USD 11.41 Billion in 2025 to USD 28.45 Billion by 2031 at a 16.45% CAGR. Genome engineering is the precise modification of an organism's genetic material using technologies such as CRISPR-Cas9, TALENs, and ZFNs to insert, delete, or alter DNA sequences. The market is primarily driven by the rising prevalence of genetic and chronic diseases, coupled with substantial investments in genomic research and the expanding application of gene editing in agriculture and therapeutics.

Key Market Drivers

Continuous advancements in CRISPR and next-generation editing tools are fundamentally reshaping the market by transitioning genome engineering from experimental research to commercially viable therapeutics. This shift is exemplified by the regulatory success and subsequent commercial rollout of the first CRISPR-based treatments for sickle cell disease and beta-thalassemia. The ability to precisely correct genetic defects ex vivo has validated the clinical utility of these technologies, encouraging rapid adoption across healthcare systems and validating the commercial potential of gene-edited medicines.

Key Market Challenges

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The high cost of treatment and the complexity of reimbursement models constitute a substantial barrier to the growth of the genome engineering market. Developing genomic medicines involves capital-intensive research and manufacturing processes which necessitates high pricing to recoup investments. Consequently, these elevated costs place a severe strain on healthcare budgets and insurance providers often limiting patient eligibility and delaying coverage decisions. This financial friction prevents these therapies from reaching a wider patient population, thereby restricting the total addressable market and slowing the revenue generation required to sustain further industry innovation.

Key Market Trends

The integration of artificial intelligence and machine learning is fundamentally altering the genomic design landscape by improving the precision of editing tools. These computational technologies enable researchers to predict off-target effects and optimize guide RNA sequences with unprecedented speed, significantly reducing the timeline for therapeutic development. This convergence of biology and computation is attracting massive investment to support generative models that can design novel biological systems from scratch.

Key Market Players

- Merck KGaA
- Sangamo Therapeutics, Inc.
- GenScript Biotech Corp
- CRISPR Therapeutics AG
- Editas Medicine, Inc.
- Precision BioSciences, Inc.
- Horizon Discovery Group plc
- Lonza Group Ltd.
- OriGene Technologies, Inc.
- Transposagen Biopharmaceuticals, Inc.

Report Scope:

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

-□ Genome Engineering Market, By Technology:

- o□ CRISPR
- o□ TALEN
- o□ ZFN
- o□ Antisense
- o□ Others

-□ Genome Engineering Market, By Delivery Method:

- o□ Ex-Vivo v/s In-Vivo

-□ Genome Engineering Market, By Application:

- o□ Cell Line Engineering
- o□ Genetic Engineering
- o□ Diagnostic Applications
- o□ Drug Discovery & Development
- o□ Others

-□ Genome Engineering Market, By End User:

- o□ Pharmaceutical & Biotechnology Companies
- o□ Academic & Research Institutions
- o□ Others

-□ Genome Engineering Market, By Region:

- o□ North America
- United States

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- Canada
- Mexico
- o□Europe
- France
- United Kingdom
- Italy
- Germany
- Spain
- o□Asia Pacific
- China
- India
- Japan
- Australia
- South Korea
- o□South America
- Brazil
- Argentina
- Colombia
- o□Middle East & Africa
- South Africa
- Saudi Arabia
- UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Genome Engineering Market.

Available Customizations:

Global Genome Engineering 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).

Table of Contents:

1. Product Overview
 - 1.1. Market Definition
 - 1.2. Scope of the Market
 - 1.2.1. Markets Covered
 - 1.2.2. Years Considered for Study
 - 1.2.3. Key Market Segmentations
2. Research Methodology
 - 2.1. Objective of the Study
 - 2.2. Baseline Methodology
 - 2.3. Key Industry Partners
 - 2.4. Major Association and Secondary Sources
 - 2.5. Forecasting Methodology
 - 2.6. Data Triangulation & Validation
 - 2.7. Assumptions and Limitations
3. Executive Summary

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- 3.1. Overview of the Market
- 3.2. Overview of Key Market Segmentations
- 3.3. Overview of Key Market Players
- 3.4. Overview of Key Regions/Countries
- 3.5. Overview of Market Drivers, Challenges, Trends
4. Voice of Customer
5. Global Genome Engineering Market Outlook
 - 5.1. Market Size & Forecast
 - 5.1.1. By Value
 - 5.2. Market Share & Forecast
 - 5.2.1. By Technology (CRISPR, TALEN, ZFN, Antisense, Others)
 - 5.2.2. By Delivery Method (Ex-Vivo v/s In-Vivo)
 - 5.2.3. By Application (Cell Line Engineering, Genetic Engineering, Diagnostic Applications, Drug Discovery & Development, Others)
 - 5.2.4. By End User (Pharmaceutical & Biotechnology Companies, Academic & Research Institutions, Others)
 - 5.2.5. By Region
 - 5.2.6. By Company (2025)
 - 5.3. Market Map
6. North America Genome Engineering Market Outlook
 - 6.1. Market Size & Forecast
 - 6.1.1. By Value
 - 6.2. Market Share & Forecast
 - 6.2.1. By Technology
 - 6.2.2. By Delivery Method
 - 6.2.3. By Application
 - 6.2.4. By End User
 - 6.2.5. By Country
 - 6.3. North America: Country Analysis
 - 6.3.1. United States Genome Engineering Market Outlook
 - 6.3.1.1. Market Size & Forecast
 - 6.3.1.1.1. By Value
 - 6.3.1.2. Market Share & Forecast
 - 6.3.1.2.1. By Technology
 - 6.3.1.2.2. By Delivery Method
 - 6.3.1.2.3. By Application
 - 6.3.1.2.4. By End User
 - 6.3.2. Canada Genome Engineering Market Outlook
 - 6.3.2.1. Market Size & Forecast
 - 6.3.2.1.1. By Value
 - 6.3.2.2. Market Share & Forecast
 - 6.3.2.2.1. By Technology
 - 6.3.2.2.2. By Delivery Method
 - 6.3.2.2.3. By Application
 - 6.3.2.2.4. By End User
 - 6.3.3. Mexico Genome Engineering Market Outlook
 - 6.3.3.1. Market Size & Forecast
 - 6.3.3.1.1. By Value

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- 6.3.3.2. Market Share & Forecast
 - 6.3.3.2.1. By Technology
 - 6.3.3.2.2. By Delivery Method
 - 6.3.3.2.3. By Application
 - 6.3.3.2.4. By End User
- 7. Europe Genome Engineering Market Outlook
 - 7.1. Market Size & Forecast
 - 7.1.1. By Value
 - 7.2. Market Share & Forecast
 - 7.2.1. By Technology
 - 7.2.2. By Delivery Method
 - 7.2.3. By Application
 - 7.2.4. By End User
 - 7.2.5. By Country
 - 7.3. Europe: Country Analysis
 - 7.3.1. Germany Genome Engineering Market Outlook
 - 7.3.1.1. Market Size & Forecast
 - 7.3.1.1.1. By Value
 - 7.3.1.2. Market Share & Forecast
 - 7.3.1.2.1. By Technology
 - 7.3.1.2.2. By Delivery Method
 - 7.3.1.2.3. By Application
 - 7.3.1.2.4. By End User
 - 7.3.2. France Genome Engineering Market Outlook
 - 7.3.2.1. Market Size & Forecast
 - 7.3.2.1.1. By Value
 - 7.3.2.2. Market Share & Forecast
 - 7.3.2.2.1. By Technology
 - 7.3.2.2.2. By Delivery Method
 - 7.3.2.2.3. By Application
 - 7.3.2.2.4. By End User
 - 7.3.3. United Kingdom Genome Engineering Market Outlook
 - 7.3.3.1. Market Size & Forecast
 - 7.3.3.1.1. By Value
 - 7.3.3.2. Market Share & Forecast
 - 7.3.3.2.1. By Technology
 - 7.3.3.2.2. By Delivery Method
 - 7.3.3.2.3. By Application
 - 7.3.3.2.4. By End User
 - 7.3.4. Italy Genome Engineering Market Outlook
 - 7.3.4.1. Market Size & Forecast
 - 7.3.4.1.1. By Value
 - 7.3.4.2. Market Share & Forecast
 - 7.3.4.2.1. By Technology
 - 7.3.4.2.2. By Delivery Method
 - 7.3.4.2.3. By Application
 - 7.3.4.2.4. By End User

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- 7.3.5. Spain Genome Engineering Market Outlook
 - 7.3.5.1. Market Size & Forecast
 - 7.3.5.1.1. By Value
 - 7.3.5.2. Market Share & Forecast
 - 7.3.5.2.1. By Technology
 - 7.3.5.2.2. By Delivery Method
 - 7.3.5.2.3. By Application
 - 7.3.5.2.4. By End User
- 8. Asia Pacific Genome Engineering Market Outlook
 - 8.1. Market Size & Forecast
 - 8.1.1. By Value
 - 8.2. Market Share & Forecast
 - 8.2.1. By Technology
 - 8.2.2. By Delivery Method
 - 8.2.3. By Application
 - 8.2.4. By End User
 - 8.2.5. By Country
 - 8.3. Asia Pacific: Country Analysis
 - 8.3.1. China Genome Engineering Market Outlook
 - 8.3.1.1. Market Size & Forecast
 - 8.3.1.1.1. By Value
 - 8.3.1.2. Market Share & Forecast
 - 8.3.1.2.1. By Technology
 - 8.3.1.2.2. By Delivery Method
 - 8.3.1.2.3. By Application
 - 8.3.1.2.4. By End User
 - 8.3.2. India Genome Engineering Market Outlook
 - 8.3.2.1. Market Size & Forecast
 - 8.3.2.1.1. By Value
 - 8.3.2.2. Market Share & Forecast
 - 8.3.2.2.1. By Technology
 - 8.3.2.2.2. By Delivery Method
 - 8.3.2.2.3. By Application
 - 8.3.2.2.4. By End User
 - 8.3.3. Japan Genome Engineering Market Outlook
 - 8.3.3.1. Market Size & Forecast
 - 8.3.3.1.1. By Value
 - 8.3.3.2. Market Share & Forecast
 - 8.3.3.2.1. By Technology
 - 8.3.3.2.2. By Delivery Method
 - 8.3.3.2.3. By Application
 - 8.3.3.2.4. By End User
 - 8.3.4. South Korea Genome Engineering Market Outlook
 - 8.3.4.1. Market Size & Forecast
 - 8.3.4.1.1. By Value
 - 8.3.4.2. Market Share & Forecast
 - 8.3.4.2.1. By Technology

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- 8.3.4.2.2. By Delivery Method
- 8.3.4.2.3. By Application
- 8.3.4.2.4. By End User
- 8.3.5. Australia Genome Engineering Market Outlook
 - 8.3.5.1. Market Size & Forecast
 - 8.3.5.1.1. By Value
 - 8.3.5.2. Market Share & Forecast
 - 8.3.5.2.1. By Technology
 - 8.3.5.2.2. By Delivery Method
 - 8.3.5.2.3. By Application
 - 8.3.5.2.4. By End User
- 9. Middle East & Africa Genome Engineering Market Outlook
 - 9.1. Market Size & Forecast
 - 9.1.1. By Value
 - 9.2. Market Share & Forecast
 - 9.2.1. By Technology
 - 9.2.2. By Delivery Method
 - 9.2.3. By Application
 - 9.2.4. By End User
 - 9.2.5. By Country
 - 9.3. Middle East & Africa: Country Analysis
 - 9.3.1. Saudi Arabia Genome Engineering Market Outlook
 - 9.3.1.1. Market Size & Forecast
 - 9.3.1.1.1. By Value
 - 9.3.1.2. Market Share & Forecast
 - 9.3.1.2.1. By Technology
 - 9.3.1.2.2. By Delivery Method
 - 9.3.1.2.3. By Application
 - 9.3.1.2.4. By End User
 - 9.3.2. UAE Genome Engineering Market Outlook
 - 9.3.2.1. Market Size & Forecast
 - 9.3.2.1.1. By Value
 - 9.3.2.2. Market Share & Forecast
 - 9.3.2.2.1. By Technology
 - 9.3.2.2.2. By Delivery Method
 - 9.3.2.2.3. By Application
 - 9.3.2.2.4. By End User
 - 9.3.3. South Africa Genome Engineering Market Outlook
 - 9.3.3.1. Market Size & Forecast
 - 9.3.3.1.1. By Value
 - 9.3.3.2. Market Share & Forecast
 - 9.3.3.2.1. By Technology
 - 9.3.3.2.2. By Delivery Method
 - 9.3.3.2.3. By Application
 - 9.3.3.2.4. By End User
 - 10. South America Genome Engineering Market Outlook
 - 10.1. Market Size & Forecast

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- 10.1.1. By Value
- 10.2. Market Share & Forecast
 - 10.2.1. By Technology
 - 10.2.2. By Delivery Method
 - 10.2.3. By Application
 - 10.2.4. By End User
 - 10.2.5. By Country
- 10.3. South America: Country Analysis
 - 10.3.1. Brazil Genome Engineering Market Outlook
 - 10.3.1.1. Market Size & Forecast
 - 10.3.1.1.1. By Value
 - 10.3.1.2. Market Share & Forecast
 - 10.3.1.2.1. By Technology
 - 10.3.1.2.2. By Delivery Method
 - 10.3.1.2.3. By Application
 - 10.3.1.2.4. By End User
 - 10.3.2. Colombia Genome Engineering Market Outlook
 - 10.3.2.1. Market Size & Forecast
 - 10.3.2.1.1. By Value
 - 10.3.2.2. Market Share & Forecast
 - 10.3.2.2.1. By Technology
 - 10.3.2.2.2. By Delivery Method
 - 10.3.2.2.3. By Application
 - 10.3.2.2.4. By End User
 - 10.3.3. Argentina Genome Engineering Market Outlook
 - 10.3.3.1. Market Size & Forecast
 - 10.3.3.1.1. By Value
 - 10.3.3.2. Market Share & Forecast
 - 10.3.3.2.1. By Technology
 - 10.3.3.2.2. By Delivery Method
 - 10.3.3.2.3. By Application
 - 10.3.3.2.4. By End User
- 11. Market Dynamics
 - 11.1. Drivers
 - 11.2. Challenges
- 12. Market Trends & Developments
 - 12.1. Merger & Acquisition (If Any)
 - 12.2. Product Launches (If Any)
 - 12.3. Recent Developments
- 13. Global Genome Engineering Market: SWOT Analysis
- 14. Porter's Five Forces Analysis
 - 14.1. Competition in the Industry
 - 14.2. Potential of New Entrants
 - 14.3. Power of Suppliers
 - 14.4. Power of Customers
 - 14.5. Threat of Substitute Products
- 15. Competitive Landscape

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- 15.1. Merck KGaA
 - 15.1.1. Business Overview
 - 15.1.2. Products & Services
 - 15.1.3. Recent Developments
 - 15.1.4. Key Personnel
 - 15.1.5. SWOT Analysis
- 15.2. Sangamo Therapeutics, Inc.
- 15.3. GenScript Biotech Corp
- 15.4. CRISPR Therapeutics AG
- 15.5. Editas Medicine, Inc.
- 15.6. Precision BioSciences, Inc.
- 15.7. Horizon Discovery Group plc
- 15.8. Lonza Group Ltd.
- 15.9. OriGene Technologies, Inc.
- 15.10. Transposagen Biopharmaceuticals, Inc.
- 16. Strategic Recommendations
- 17. About Us & Disclaimer

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