

Global Transfection Reagents & Equipment Market Size study, by Product Type, Application (Gene Therapy, Vaccine Development, Cell Biology Research, Biopharmaceutical Production, Agricultural Biotechnology, Tissue Engineering), Delivery Method, End User, and Regional Forecasts 2022-2032

<https://marketpublishers.com/r/GBCC3DFF547CEN.html>

Date: May 2025

Pages: 285

Price: US\$ 3,750.00 (Single User License)

ID: GBCC3DFF547CEN

Abstracts

The Global Transfection Reagents & Equipment Market is valued at approximately USD 1.21 billion in 2023 and is poised to expand at a healthy CAGR of 8.45% during the forecast period 2024-2032. Transfection technology, a vital cornerstone in modern molecular biology, plays a pivotal role in gene expression studies, therapeutic development, and cellular engineering. It involves the introduction of nucleic acids into eukaryotic cells via chemical, physical, or viral-based methods. As the foundation for innovations in gene therapy, cell line development, and vaccine design, transfection tools are increasingly being woven into the fabric of biomedical research and biopharmaceutical manufacturing. In this evolving scientific landscape, the demand for highly efficient and low-toxicity transfection reagents and precision-driven instruments is witnessing a noticeable upsurge across various research and clinical applications.

Accelerated adoption of gene and cell therapies, coupled with an intensifying focus on personalized medicine, has significantly fueled the need for scalable and high-throughput transfection systems. The biopharmaceutical industry's growing reliance on recombinant protein production and genetic modification techniques has driven investments into the development of optimized delivery vectors and reagent formulations. Additionally, the COVID-19 pandemic spotlighted the criticality of vaccine development platforms, propelling the use of transfection technologies in mRNA vaccine production. Nevertheless, market growth is somewhat hindered by technical constraints

such as low transfection efficiency in hard-to-transfect cells and cytotoxic side effects, especially in primary and stem cell lines, which continue to present practical challenges for researchers.

A wide variety of transfection methodologies—ranging from viral vector systems to non-viral lipid-based reagents and physical approaches like electroporation and microinjection—enable flexible delivery of nucleic acids based on target cell types and applications. Non-viral vectors, being safer and cost-effective, are gaining traction in clinical and laboratory settings alike. Additionally, the integration of automated transfection instruments and high-content imaging systems is simplifying complex workflows, enhancing reproducibility, and increasing the scalability of experiments. As the market matures, the push towards reagent customization, single-use systems, and integration with CRISPR technologies is opening lucrative new avenues.

Transfection reagents and equipment are increasingly being deployed across a spectrum of scientific frontiers—from advancing tissue engineering and agricultural biotechnology to fine-tuning disease models in pharmacogenomics. Government funding in synthetic biology and university-industry collaborations are catalyzing innovative approaches, particularly in academic institutions and research labs. Moreover, Contract Research Organizations (CROs) and diagnostic labs are ramping up their reliance on efficient transfection protocols to accelerate timelines for biomarker discovery, therapeutic screening, and genome editing. The growing availability of end-to-end kits and cloud-connected devices is further democratizing access to this essential biotech toolkit.

From a geographical standpoint, North America dominates the global transfection reagents & equipment market owing to its robust biopharma infrastructure, early adoption of genomic technologies, and a concentration of key industry players. The U.S., in particular, benefits from extensive R&D expenditure and favorable regulatory support for advanced therapies. Europe follows closely, driven by escalating investments in gene editing and vaccine research across Germany, France, and the UK. Meanwhile, the Asia Pacific region is projected to witness the fastest growth over the forecast period, buoyed by increasing research funding, a burgeoning biotech ecosystem, and rising collaborations between international pharmaceutical giants and local academic institutions in countries such as China, India, and South Korea.

Major market player included in this report are:

Thermo Fisher Scientific, Inc.

Merck KGaA

Bio-Rad Laboratories, Inc.

Promega Corporation

Agilent Technologies, Inc.

Takara Bio Inc.

Mirus Bio LLC

Polyplus-transfection SA

Lonza Group AG

QIAGEN N.V.

GenScript Biotech Corporation

SignaGen Laboratories

MaxCyte, Inc.

OriGene Technologies, Inc.

Bio-Techne Corporation

The detailed segments and sub-segment of the market are explained below:

By Product Type

Reagents

Equipment

By Application

- Gene Therapy
- Vaccine Development
- Cell Biology Research
- Biopharmaceutical Production
- Agricultural Biotechnology
- Tissue Engineering

By Delivery Method

- Viral Vectors
- Non-Viral Vectors
- Physical Methods
- Electroporation
- Microinjection

By End User

- Biopharmaceutical Companies
- Academic Research Institutions
- Contract Research Organizations (CROs)
- Government Agencies
- Diagnostic Laboratories

By Region:

North America

U.S.

Canada

Europe

UK

Germany

France

Spain

Italy

Rest of Europe

Asia Pacific

China

India

Japan

Australia

South Korea

Rest of Asia Pacific

Latin America

Brazil

Mexico

Middle East & Africa

Saudi Arabia

South Africa

Rest of Middle East & Africa

Years considered for the study are as follows:

Historical year – 2022

Base year – 2023

Forecast period – 2024 to 2032

Key Takeaways:

Market Estimates & Forecast for 10 years from 2022 to 2032.

Annualized revenues and regional level analysis for each market segment.

Detailed analysis of geographical landscape with Country level analysis of major regions.

Competitive landscape with information on major players in the market.

Analysis of key business strategies and recommendations on future market approach.

Analysis of competitive structure of the market.

Demand side and supply side analysis of the market.

Contents

CHAPTER 1. GLOBAL TRANSFECTION REAGENTS & EQUIPMENT MARKET EXECUTIVE SUMMARY

- 1.1. Global Transfection Reagents & Equipment Market Size & Forecast (2022–2032)
- 1.2. Regional Summary
- 1.3. Segmental Summary
 - 1.3.1. By Product Type
 - 1.3.2. By Application
 - 1.3.3. By Delivery Method
 - 1.3.4. By End User
- 1.4. Key Trends
- 1.5. Recession Impact
- 1.6. Analyst Recommendation & Conclusion

CHAPTER 2. GLOBAL TRANSFECTION REAGENTS & EQUIPMENT MARKET DEFINITION AND RESEARCH ASSUMPTIONS

- 2.1. Research Objective
- 2.2. Market Definition
- 2.3. Research Assumptions
 - 2.3.1. Inclusion & Exclusion
 - 2.3.2. Limitations
 - 2.3.3. Supply Side Analysis
 - 2.3.3.1. Availability
 - 2.3.3.2. Infrastructure
 - 2.3.3.3. Regulatory Environment
 - 2.3.3.4. Market Competition
 - 2.3.3.5. Economic Viability (Consumer's Perspective)
 - 2.3.4. Demand Side Analysis
 - 2.3.4.1. Regulatory Frameworks
 - 2.3.4.2. Technological Advancements
 - 2.3.4.3. Environmental Considerations
 - 2.3.4.4. Consumer Awareness & Acceptance
- 2.4. Estimation Methodology
- 2.5. Years Considered for the Study
- 2.6. Currency Conversion Rates

CHAPTER 3. GLOBAL TRANSFECTION REAGENTS & EQUIPMENT MARKET DYNAMICS

3.1. Market Drivers

- 3.1.1. Surging Demand for Gene and Cell Therapy Platforms
- 3.1.2. Escalating Investments in Vaccine Development and mRNA Technologies
- 3.1.3. Intensified Focus on Personalized Medicine and Recombinant Protein

Production

3.2. Market Challenges

- 3.2.1. Low Transfection Efficiency in Hard-to-Transfect Cell Lines
- 3.2.2. Cytotoxicity and Cell Viability Concerns

3.3. Market Opportunities

- 3.3.1. Integration of Automated and CRISPR-Compatible Transfection Systems
- 3.3.2. Rising Adoption of Non-Viral Vector Technologies
- 3.3.3. Growth Potential in Emerging Asian and Latin American Markets

CHAPTER 4. GLOBAL TRANSFECTION REAGENTS & EQUIPMENT MARKET INDUSTRY ANALYSIS

4.1. Porter's Five Forces Model

- 4.1.1. Bargaining Power of Suppliers
- 4.1.2. Bargaining Power of Buyers
- 4.1.3. Threat of New Entrants
- 4.1.4. Threat of Substitutes
- 4.1.5. Competitive Rivalry
- 4.1.6. Futuristic Approach to Porter's Model
- 4.1.7. Impact Analysis

4.2. PESTEL Analysis

- 4.2.1. Political
- 4.2.2. Economic
- 4.2.3. Social
- 4.2.4. Technological
- 4.2.5. Environmental
- 4.2.6. Legal

4.3. Top Investment Opportunity

4.4. Top Winning Strategies

4.5. Disruptive Trends

4.6. Industry Expert Perspective

4.7. Analyst Recommendation & Conclusion

CHAPTER 5. GLOBAL TRANSFECTION REAGENTS & EQUIPMENT MARKET SIZE & FORECASTS BY PRODUCT TYPE 2022–2032

- 5.1. Segment Dashboard
- 5.2. Revenue Trend Analysis, 2022 & 2032 (USD Million)
 - 5.2.1. Reagents
 - 5.2.2. Equipment

CHAPTER 6. GLOBAL TRANSFECTION REAGENTS & EQUIPMENT MARKET SIZE & FORECASTS BY APPLICATION 2022–2032

- 6.1. Segment Dashboard
- 6.2. Revenue Trend Analysis, 2022 & 2032 (USD Million)
 - 6.2.1. Gene Therapy
 - 6.2.2. Vaccine Development
 - 6.2.3. Cell Biology Research
 - 6.2.4. Biopharmaceutical Production
 - 6.2.5. Agricultural Biotechnology
 - 6.2.6. Tissue Engineering

CHAPTER 7. GLOBAL TRANSFECTION REAGENTS & EQUIPMENT MARKET SIZE & FORECASTS BY DELIVERY METHOD 2022–2032

- 7.1. Segment Dashboard
- 7.2. Revenue Trend Analysis, 2022 & 2032 (USD Million)
 - 7.2.1. Viral Vectors
 - 7.2.2. Non-Viral Vectors
 - 7.2.3. Physical Methods
 - 7.2.3.1. Electroporation
 - 7.2.3.2. Microinjection

CHAPTER 8. GLOBAL TRANSFECTION REAGENTS & EQUIPMENT MARKET SIZE & FORECASTS BY END USER 2022–2032

- 8.1. Segment Dashboard
- 8.2. Revenue Trend Analysis, 2022 & 2032 (USD Million)
 - 8.2.1. Biopharmaceutical Companies
 - 8.2.2. Academic Research Institutions

- 8.2.3. Contract Research Organizations (CROs)
- 8.2.4. Government Agencies
- 8.2.5. Diagnostic Laboratories

CHAPTER 9. GLOBAL TRANSFECTION REAGENTS & EQUIPMENT MARKET SIZE & FORECASTS BY REGION 2022–2032

- 9.1. North America Market
 - 9.1.1. U.S. Market
 - 9.1.1.1. Product Type breakdown, 2022–2032
 - 9.1.1.2. Application breakdown, 2022–2032
 - 9.1.2. Canada Market
- 9.2. Europe Market
 - 9.2.1. UK Market
 - 9.2.2. Germany Market
 - 9.2.3. France Market
 - 9.2.4. Spain Market
 - 9.2.5. Italy Market
 - 9.2.6. Rest of Europe Market
- 9.3. Asia Pacific Market
 - 9.3.1. China Market
 - 9.3.2. India Market
 - 9.3.3. Japan Market
 - 9.3.4. Australia Market
 - 9.3.5. South Korea Market
 - 9.3.6. Rest of Asia Pacific Market
- 9.4. Latin America Market
 - 9.4.1. Brazil Market
 - 9.4.2. Mexico Market
 - 9.4.3. Rest of Latin America Market
- 9.5. Middle East & Africa Market
 - 9.5.1. Saudi Arabia Market
 - 9.5.2. South Africa Market
 - 9.5.3. Rest of Middle East & Africa Market

CHAPTER 10. COMPETITIVE INTELLIGENCE

- 10.1. Key Company SWOT Analysis
 - 10.1.1. Thermo Fisher Scientific, Inc.

- 10.1.2. Merck KGaA
- 10.1.3. Bio-Rad Laboratories, Inc.
- 10.2. Top Market Strategies
- 10.3. Company Profiles
 - 10.3.1. Thermo Fisher Scientific, Inc.
 - 10.3.1.1. Key Information
 - 10.3.1.2. Overview
 - 10.3.1.3. Financial (Subject to Data Availability)
 - 10.3.1.4. Product Summary
 - 10.3.1.5. Market Strategies
 - 10.3.2. Merck KGaA
 - 10.3.3. Bio-Rad Laboratories, Inc.
 - 10.3.4. Promega Corporation
 - 10.3.5. Agilent Technologies, Inc.
 - 10.3.6. Takara Bio Inc.
 - 10.3.7. Mirus Bio LLC
 - 10.3.8. Polyplus-transfection SA
 - 10.3.9. Lonza Group AG
 - 10.3.10. QIAGEN N.V.
 - 10.3.11. GenScript Biotech Corporation
 - 10.3.12. SignaGen Laboratories
 - 10.3.13. MaxCyte, Inc.
 - 10.3.14. OriGene Technologies, Inc.
 - 10.3.15. Bio-Techne Corporation

CHAPTER 11. RESEARCH PROCESS

- 11.1. Research Process
 - 11.1.1. Data Mining
 - 11.1.2. Analysis
 - 11.1.3. Market Estimation
 - 11.1.4. Validation
 - 11.1.5. Publishing
- 11.2. Research Attributes

I would like to order

Product name: Global Transfection Reagents & Equipment Market Size study, by Product Type, Application (Gene Therapy, Vaccine Development, Cell Biology Research, Biopharmaceutical Production, Agricultural Biotechnology, Tissue Engineering), Delivery Method, End User, and Regional Forecasts 2022-2032

Product link: <https://marketpublishers.com/r/GBCC3DFF547CEN.html>

Price: US\$ 3,750.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/GBCC3DFF547CEN.html>