

# Viral Vector Manufacturing Market to reach \$3.8 Billion by 2031, growing at 20.3% CAGR, fueled by gene & cell therapies

*Viral vector manufacturing market accelerates with CAR-T therapies and a strong pipeline of gene therapies.*

AUSTIN, TX, UNITED STATES, August 28, 2025 /EINPresswire.com/ -- The [viral vector manufacturing market](#) reached USD 0.9 billion in 2022 and is projected to reach USD 3.8 billion by 2031, growing at a CAGR of 20.3% during the forecast period 2024–2031, according to DataM Intelligence. This exceptional growth underscores the expanding role of viral vectors in the biopharmaceutical industry and highlights their importance in enabling next-generation therapies.



The market has witnessed significant growth in recent years, driven by the increasing demand for advanced gene therapies, cell therapies, and vaccines. Viral vectors serve as the backbone of these therapies, functioning as efficient delivery vehicles for therapeutic genes into targeted cells. The growing prevalence of cancer, genetic disorders, and infectious diseases has accelerated research and commercialization efforts, making viral vector production a critical component of the biopharmaceutical landscape.

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FDA and EMA approvals are accelerating viral vector adoption, fueling breakthroughs in rare diseases, oncology, and infectious disease treatments.”

*DataM Intelligence*

Currently, North America dominates the market due to strong biopharma infrastructure, supportive government

funding, and the rising number of FDA-approved gene therapies. However, Asia-Pacific is expected to grow at the fastest CAGR, fueled by expanding biotech ecosystems in China, India,

Japan, and South Korea. In terms of vector type, adeno-associated viral (AAV) vectors hold the largest share, while oncology applications lead the therapeutic landscape due to the increasing adoption of CAR-T therapies.

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### Key Highlights from the Report

- Viral vector manufacturing market reached USD 0.9 billion in 2022 and will grow to USD 3.8 billion by 2031 at a CAGR of 20.3%.
- North America dominates the market, while Asia-Pacific is the fastest-growing region.
- AAV vectors lead the segment owing to their safety and wide application in clinical trials.
- Oncology applications drive the largest demand, with CAR-T cell therapy leading adoption.
- Contract Development and Manufacturing Organizations (CDMOs) play a pivotal role in scaling production.
- Growing FDA and EMA approvals of gene therapies are fueling global demand for viral vectors.

### Market Segmentation

The viral vector manufacturing market is segmented into vector type, disease indication, application, and end-user, each contributing uniquely to market growth and shaping the overall industry landscape.

#### By Vector Type

The market is dominated by adeno-associated viral (AAV) vectors, which are widely preferred due to their ability to deliver genetic material without integrating into the host genome. This feature makes them safer and more reliable for clinical use, particularly in therapies targeting neurological and ophthalmic conditions. The recent surge in FDA-approved AAV-based gene therapies has cemented their role as the leading segment. Lentiviral vectors represent another fast-growing category, especially due to their applications in chimeric antigen receptor T-cell (CAR-T) therapies. These vectors are capable of integrating into dividing and non-dividing cells, making them suitable for long-term gene expression, which is crucial for oncology treatments. Meanwhile, adenoviral and retroviral vectors continue to be vital for vaccine production and oncology trials, with adenoviral vectors having demonstrated immense utility during the COVID-19 pandemic in vaccine development.

#### By Disease Indication

When segmented by therapeutic area, oncology dominates the market. The rise of immuno-oncology and the success of CAR-T therapies, which rely heavily on lentiviral vectors, has created robust demand. Cancer remains a leading global health challenge, and gene-modified therapies

are being positioned as breakthrough solutions, boosting the adoption of viral vectors. Rare genetic disorders also represent a significant market opportunity. Conditions such as spinal muscular atrophy, hemophilia, and Duchenne muscular dystrophy are increasingly being targeted with gene therapies that provide curative potential rather than symptom management. Furthermore, infectious diseases are emerging as an important segment, highlighted by the pivotal role of viral vectors in developing vaccines against COVID-19 and other viral outbreaks. This indicates that beyond rare diseases and oncology, viral vectors will remain indispensable in public health preparedness.

### By Application

In terms of application, gene therapy leads the market with the largest share, reflecting the growing pipeline of approved and investigational therapies designed to address genetic diseases at their root cause. Cell therapy, especially CAR-T therapy, is witnessing exponential growth and is expected to remain a key driver over the coming years. Viral vectors are integral in modifying patient-derived cells to enhance their cancer-fighting potential, making this a critical application segment. Additionally, vaccine development continues to represent a strong application area. Adenoviral vector-based vaccines have been instrumental in addressing the COVID-19 pandemic, and their success is encouraging further use in combating other infectious diseases, reinforcing their role in both preventive and therapeutic healthcare.

### By End-User

From the perspective of end-users, biopharmaceutical and biotechnology companies account for the largest market share, as they are the primary drivers of innovation, clinical trials, and commercialization efforts. These companies are investing heavily in expanding their manufacturing capabilities, either in-house or through strategic partnerships with CDMOs. Academic and research institutes play a complementary role by spearheading early-stage research, developing novel therapies, and serving as incubators for emerging technologies. Importantly, Contract Development and Manufacturing Organizations (CDMOs) are becoming increasingly essential in this market. As demand outpaces in-house production capacities, CDMOs offer scalable and cost-effective solutions, bridging the gap between research and commercialization. Their ability to meet regulatory compliance and manage large-scale production makes them indispensable partners for biotech firms worldwide.

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### Regional Insights

#### North America

North America remains the largest market, driven by a robust pipeline of gene and cell therapies, increasing FDA approvals, and significant investments in biotech. The U.S. alone accounts for a substantial share, with leading manufacturers and CDMOs expanding production facilities.

## Europe

Europe holds the second-largest share, with strong regulatory support from the EMA and the presence of established biotech hubs in Germany, the UK, and France. Strategic collaborations across the EU also enhance R&D.

## Asia-Pacific

Asia-Pacific is forecasted to grow at the fastest CAGR, thanks to expanding healthcare investments, supportive policies, and the rise of clinical trials in China, Japan, India, and South Korea. Countries like China are aggressively building local viral vector production facilities.

## Latin America and Middle East & Africa

These regions are still emerging but show promising growth as governments expand biotech infrastructure and collaborate with international pharmaceutical players.

## Market Dynamics

### Market Drivers

One of the strongest drivers of the viral vector manufacturing market is the growing number of gene and cell therapy approvals worldwide. Regulatory bodies such as the FDA and EMA are increasingly approving gene therapies, reflecting both their therapeutic potential and the growing confidence in their safety and efficacy. These therapies, whether targeting rare genetic conditions or cancer, all require viral vectors as the central delivery mechanism. Additionally, the rising prevalence of genetic disorders and chronic diseases such as cancer has created an urgent demand for innovative treatment modalities. According to the World Health Organization, cancer remains one of the leading causes of death worldwide, and gene-modified cell therapies have shown remarkable potential in addressing treatment-resistant cases.

### Market Restraints

Despite strong growth, the viral vector manufacturing market faces several significant restraints. One of the most pressing issues is the high cost and complexity of manufacturing. Producing viral vectors requires highly specialized facilities, state-of-the-art bioreactors, and stringent quality control measures to meet global Good Manufacturing Practice (GMP) standards. The technical difficulty of scaling up production from laboratory to commercial levels creates bottlenecks in supply, limiting accessibility for smaller biotech firms and research institutions.

### Market Opportunities

On the positive side, the market presents several lucrative opportunities. The most notable is the rise of Contract Development and Manufacturing Organizations (CDMOs), which are stepping in to address the scalability challenges faced by smaller firms. By offering end-to-end services ranging from process development to large-scale manufacturing, CDMOs are enabling biopharma companies to bring therapies to market faster and more efficiently. This trend is expected to grow as more gene therapies advance through clinical pipelines.

The Asia-Pacific region presents another major growth opportunity. Governments in China, Japan, South Korea, and India are making significant investments in local biotech ecosystems, building manufacturing hubs, and creating favorable regulatory frameworks. These initiatives, combined with lower operational costs, make Asia-Pacific a highly attractive region for expansion. Furthermore, technological innovations such as automation, single-use bioreactors, and advanced quality control systems are gradually reducing costs and improving scalability. As these technologies mature, they will open doors to broader adoption, expanding the reach of viral vector-based therapies across more therapeutic areas.

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### Reasons to Buy the Report

- Comprehensive insights into market growth drivers, restraints, and opportunities.
- Regional analysis covering developed and emerging markets.
- In-depth segmentation by vector type, disease indication, and end-user.
- Competitive landscape analysis with company strategies and recent developments.
- Forecasts and projections to support investment and strategic planning.

### Frequently Asked Questions (FAQs)

- How big is the viral vector manufacturing market in 2024?
- What are the main drivers boosting the viral vector manufacturing industry?
- Which region will dominate the viral vector manufacturing market through 2031?
- What is the expected CAGR of the viral vector manufacturing market during 2024–2031?
- Who are the key players in the global viral vector manufacturing market?

### Company Insights

Key players operating in the viral vector manufacturing market include:

- Lonza Group AG
- Oxford Biomedica
- Catalent, Inc.
- Thermo Fisher Scientific Inc.
- FUJIFILM Diosynth Biotechnologies
- Wuxi AppTec
- Merck KGaA
- Cobra Biologics

### Recent Developments:

In 2023, Catalent expanded its viral vector manufacturing sites in the U.S. and Europe to meet

rising global demand for gene therapy products.

In 2024, Oxford Biomedica entered into a strategic agreement with a leading U.S. biotech company to supply large-scale AAV vector production for clinical and commercial use.

## Conclusion

The viral vector manufacturing market is at the heart of the next wave of medical innovation, empowering breakthroughs in gene therapy, oncology, vaccines, and rare disease treatments. With the market projected to grow from USD 0.9 billion in 2022 to USD 3.8 billion by 2031 at a CAGR of 20.3%, the outlook is highly promising. While scalability, costs, and regulatory hurdles remain challenges, increasing investments, supportive government initiatives, and the rise of CDMOs are set to unlock new opportunities. Companies that leverage innovation, strategic partnerships, and global expansion will be well-positioned to lead this dynamic market into the future.

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