Viral Vector and Plasmid Dna Manufacturing Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

Market Report | 2023-01-23 | 131 pages | Mordor Intelligence

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Report description:

The viral vector and plasmid DNA manufacturing market is projected to reach USD 2,344.29 million by 2027, registering a CAGR of 23.38 % during the forecast period (2022-2027).

The COVID-19 outbreak is expected to positively impact the viral vector and plasmid DNA manufacturing market. Several COVID-19 vaccine candidates entering clinical trials also include viral vector vaccines. These vaccines are likely to be among the COVID-19 vaccines authorized for use worldwide. Many of them have also received or are in the final stages of receiving approval. In January 2021, Johnson & Johnson announced favorable efficacy and safety data from its Phase 3 ENSEMBLE clinical trial using its AdVac vaccine platform for COVID-19. Its single-dose COVID-19 vaccine, currently under development at its Janssen Pharmaceutical Companies, met all preconditions and targets. The AdVac viral vector technology could provide a potent and long-lasting humoral and cellular immune response to the body. Another viral vector-based vaccine, which has received several approvals, is the Oxford-AstraZeneca COVID-19 vaccine. The vaccine was first discovered in November 2020 and has since been mass-produced to vaccinate people. The COVID-19 viral vector vaccines are under development worldwide using non-replicating viral vectors. The immune response of these vaccines follows a similar pattern, i.e., it includes antibody-producing B cells and T cells, which seek out and destroy infected cells in the body, providing long-lasting immunity. Further research and increased investment in this field are expected to positively affect vaccine development.

Demand for plasmid DNA is growing steadily due to growth in gene therapy development. pDNA is a prerequisite for producing AAV (adeno-associated virus), lentivirus, and other viral vector platforms. There is also an increase in several genetic disorders and numerous life-threatening disorders, especially heart diseases, AIDS, cystic fibrosis, and age-related disorders. For instance, as per the Centers for Disease Control and Prevention, 2021, hypertension, or high blood pressure, is a leading risk factor for cardiovascular disease and causes an estimated 10 million deaths worldwide each year. These statistics represent 35% of global

deaths. Gene therapy with viral vectors provides a complete cure to patients suffering from genetic disorders and other life-threatening disorders rather than ease symptoms with other treatments. Several clinical studies are being conducted on viral vectors and plasmid DNA manufacturing, emphasizing the potential of gene therapy to address important medical needs.

Several players, including pharmaceutical companies, contract manufacturing organizations, research institutes, and non-profit organizations, are playing a critical role in the development and production of these vectors. In April 2021, ViroCell Biologics, the UK clinical trial-focused viral vector manufacturer, launched its viral vectors. Through this launch, the company will supply viral vectors and gene-modified cells to academic and corporate clients for translational cell and gene therapies going into clinical trials.

Viral Vector & Plasmid DNorth America Manufacturing Market Trends

By Application, Cancer Segment is Expected to Register Robust Growth.

The upsurge in the global incidence of cancer and modern healthcare facilities are acting as major drivers for the segment growth. According to GLOBOCAN 2020, there were 1,92,92,789 new cancer cases in 2020, and it is projected to increase to 2,88,87,940 cases by 2040.. Additionally, there are also many gene therapy strategies that have been developed to treat a wide range of cancers, including suicide gene therapy, oncolytic virotherapy, anti-angiogenesis, and therapeutic gene vaccines.

According to a 2019 research article 'Chemovirotherapeutic Treatment Using Camptothecin Enhances Oncolytic Measles Virus-Mediated Killing of Breast Cancer Cells', oncolytic virotherapy represents an emerging development in anticancer therapy. Although it has been tested against a variety of cancers, including breast cancer, the efficacy of oncolytic viral vectors delivered as monotherapy is limited. Oncolytic virotherapy is a promising treatment that selectively targets and destroys cancer tissues with minimal damage to normal cells.

Currently, there are numerous Phase I and Phase II clinical trials related to viral vectors for the treatment of various types of cancers, such as brain, skin, liver, colon, breast, and kidney, among others, which are being conducted in academic centers and biotechnology companies.

Moreover, gene therapy based on viral vectors has established steady progress in the area of cancers recently. There is a mass of viral vectors that have been engineered for both preventive and therapeutic applications. Market players are also adopting various market strategies in developing novel products.

North America Dominated the Market in Terms of Revenue Generated

Currently, the North American viral vector and plasmid DNA manufacturing market is witnessing rapid growth. Companies in the region are innovating new product approaches for viral vectors. For example, in April 2018, United States-based GE Healthcare created a 'factory-in-a-box' facility to produce viral vector-based drugs, including viral vector vaccines, oncolytic viruses, and gene and cell therapies. Many companies are also increasing their production facilities. For example, in January 2020, Genopis Inc. announced to build a contract manufacturing business for plasmid DNA production in the United States with its South Korea-based partner Helixmith. In January 2021, United States-headquartered Cobra Biologics, the gene therapy division of the Cognate BioServices Group, announced that it had begun a multi-phase increase in its plasmid DNA services as a continuation of its gene therapy services' expansion project for viral vectors and plasmid DNA.

Gene therapy in Canada is also rising rapidly. It is used for the treatment of various diseases. For instance, Kymriah was the first gene therapy product approved in Canada in September 2018 for treating cancer. Health Canada approved Novartis Kymriah for pediatric, young adult, and adult patients.

In February 2019, Health Canada also approved another gene therapy product called Yescarta, manufactured by Kite Pharmaceuticals for an aggressive kind of non-Hodgkins lymphoma. Viral vector design and manufacturing control are critically important for the overall product quality, safety, and efficiency in patients through concerns such as replication competence, vector integration, and vector shedding. There are significant advancements in developing novel viral vectors, and several researchers are focusing on substituting pathogenic genes with therapeutic DNA. Nowadays, non-pathogenic, replication-defective, and human-friendly viral vectors are being widely used in clinical trials for gene therapy. As more research is expected to be conducted on viral vectors and plasmid DNA, these developments may positively impact market growth.

Viral Vector & Plasmid DNorth America Manufacturing Market Competitor Analysis

The market is still in the nascent stage. Hence, increasing focus is mainly on the development of innovative products. Key market players include Cobra Biologics, Fujifilm Diosynth Biotechnologies, SIRION Biotech, Merck KGaA Inc., and Thermo Fisher Scientific.

Various strategies, such as research and development, mergers and acquisitions, and product launches, are being adopted by domestic companies to strengthen their market position. In December 2020, CHA Biotech signed a lease agreement with Matica Bio to construct a viral vector production facility in College Station, Texas. The construction of the 25,000 sq. ft facility started in Q4 2020. It is expected to be dedicated to producing viral vectors used in cell and gene therapies, vaccines, and oncolytic products. It was scheduled to open in Q3 2021.

Additional Benefits:

The market estimate (ME) sheet in Excel format
3 months of analyst support

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