CRISPR Technology - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

Market Report | 2024-02-17 | 114 pages | Mordor Intelligence

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Report description:

The CRISPR Technology Market size is estimated at USD 3.78 billion in 2024, and is expected to reach USD 9.34 billion by 2029, growing at a CAGR of 19.89% during the forecast period (2024-2029).

The COVID-19 pandemic is expected to positively impact the market due to increased demand for diagnostic tests. For instance, in May 2020, Sherlock Biosciences announced it received Emergency Use Authorization from the United States Food and Drug Administration (FDA) for its Sherlock CRISPR SARS-CoV-2 kit, used for the detection of the virus. The equipment could provide results in approximately one hour, a much lower timeframe than other tests available in the market. Thus COVID-19 led to the development of advanced diagnostic kits using CRISPR technology and contributed to the market's growth during the pandemic period. However, the demand for CRISPR technology is expected to rise due to the emergence of new mutant strains of COVID and the need for effective diagnosis, thereby contributing to the market's growth over the coming five years.

Specific factors driving the market's growth include increasing government and private funding, rising demand for and adoption of CRISPR, and technological advancements. For the development of CRISPR technology, the government is often funded via individual investigator grants and government and private companies such as research projects and program grants, which are expected to boost the market. For instance, in September 2021, Mammoth Biosciences raised over USD 195 million of financing at a valuation of the company's CRISPR technology, Cas 14. Similarly, according to the National Center for Advancing Translational Sciences, in 2020, the Somatic Cell Genome Editing (SCGE) Program at the National Institutes of Health (NIH) awarded 24 more grants to researchers across the United States and Canada. The SCGE Program awarded a total of USD 89 million in advance genome editing grants, including CRISPR, over the next four years. This brings the total number of supported projects to 45, with approximately USD 190 million in funding spread over six years. Such funding for the market players and grants from national institutes help boost the CRISPR technology market over the forecast period.

CRISPR technology also advances genome editing across medicine, biotechnology, and agriculture, enabling scientists to conduct research in these fields through faster and more efficient genome editing worldwide. Thus, the demand for CRISPR technology is rising due to its easy, quick, and inexpensive access to vectors and the resulting next-generation tools. CRISPR-Cas9 works for many diseases, including inherited eye diseases, neurodegenerative conditions such as Alzheimer's and Huntington's, and non-inherited diseases such as cancer and HIV. According to the study published in the New England Journal of Medicine in January 2021, CRISPR-Cas9-based gene editing is being tested to treat two cases of inherited diseases: one in a patient with TDT (?-Thalassemia) and the other in a patient with SCD (sickle cell disease). During the 12 months following the administration of CTX001, both patients experienced early, substantial, and sustained increases in fetal hemoglobin levels with more than 99% pancellularity. Thus, applying CRISPR technology in sickle cell disease and ?-Thalassemia is expected to drive its demand, thereby contributing to the market's growth over the forecast period.

Thus, the studied market is expected to project growth over the forecast period due to the abovementioned factors.

CRISPR Technology Market Trends

Biomedical is Expected to Hold a Significant Market Share and is Expected to do so During the Forecast Period

The biomedical segment is expected to dominate the market over the forecast period due to the increasing usage of CRISPR technology and growing research activities. The segment involves genome engineering, disease model studies, functional genomics, and epigenetics. The CRISPR/Cas9 system is broadly and successfully applied for biomedical discoveries in several areas, particularly sensing nucleic-acid-based biomarkers of infectious and non-infectious diseases and detecting mutations and deletions indicative of genetic diseases. The rising implementation of CRISPR gene-editing tools in several areas of biomedical sciences majorly contributed to the high share of this segment.

The advent of CRISPR/Cas9 nuclease provides easy and precise genome editing. Additionally, introducing nano-carriers and improved delivery systems enhanced the efficacy and specificity of this technology. Hence, it is increasingly adopted in gene and cell therapy.

Moreover, CRISPR has several applications in biomedical sciences. For example, CRISPR-Cas9-based genome engineering is widely used in regenerative medicine. It can also improve cancer immunotherapy by fast-tracking CAR T-cell targets and generating diseased models.

Furthermore, it also has therapeutic uses, which include treating genetic disorders, drug discovery, and identifying cancer biomarkers. For instance, as per the article published in Nature in June 2021, preliminary results from a landmark clinical trial suggested that administrating CRISPR-Cas9 gene editing treatment directly into the human body is considered a safe and effective way to treat a rare, life-threatening condition.

Several companies are continuously involved in market strategies like mergers, acquisitions, and product launches. For instance, in March 2021, scientists at UC San Francisco, UC Berkeley, and UCLA received the US Food and Drug Administration approval for jointly launching an early phase, first-in-human clinical trial of a CRISPR gene correction therapy in patients with sickle cell disease by using the patient's blood-forming stem cells.

In June 2021, Vertex Pharmaceuticals Incorporated and CRISPR Therapeutics announced the new data on 22 patients, with follow-ups of at least three months and ranging from four months to 26 months, treated with the CTX001 (investigational CRISPR/Cas9-based gene-editing therapy). Therefore, the biomedical segment is estimated to witness a high market share over the forecast period due to the abovementioned factors.

North America Dominates the Market and is Expected to do so During the Forecast Period

The CRISPR market in the North American region is expected to witness significant growth during the study period due to technological innovations, government policies, product approvals, critical initiatives by market players, and the technology's multiple advantages.

The article published by the National Cancer Institute in July 2020 stated the first trial in the United States to test a CRISPR-made cancer therapy was launched at the University of Pennsylvania to find whether these treatments were safe. Initial findings from the study suggested CRISPR-based treatments were safe, with no evidence of an immune reaction to the CRISPR-edited cells. Such efforts by the researchers paved the way for further studies to utilize CRISPR technology to address unmet healthcare needs and create lucrative opportunities for market growth in this region.

In March 2021, Health Canada proposed new guidelines for the Novel Food Regulations, specifically on plant breeding, stating that gene-editing technology in agriculture, such as CRISPR, is just as safe as conventional plant breeding. These guidelines provide more certainty for plant breeders and crop science companies. Such steps by the government are expected to expand the applications of CRISPR, thus boosting the market studied.

Furthermore, competition among the existing players increased due to technological developments and their potential applications. There is an increased focus on this highly adaptable technology. For instance, in November 2021, CRISPR Therapeutics received the Regenerative Medicine Advanced Therapy (RMAT) designation from the United States (US) Food and Drug Administration (FDA) for CTX110, a wholly-owned gene-edited allogeneic CAR-T cell therapy targeting CD19+ B-cell malignancies. Such developments may help provide effective treatments, which may boost the market's growth in the future.

In July 2021, Incisive Genetics Inc., headquartered in Canada, specializing in researching and developing a novel non-viral delivery platform for targeted CRISPR-based gene therapies, received USD 2.5 million in a seed financing round led by Noel Hall and Sandra MacPherson of the MacHall group and Haig Farris. This funding enables Incisive Genetics to develop its manufacturing process and capabilities, advance critical studies to enhance its gene-editing delivery platform technology, and further add to its intellectual property portfolio. Such funding will boost innovation in CRISPR technology, thereby driving the market. Thus, the market is anticipated to grow significantly due to the company's earlier activities and increased applications of CRISPR technology in the region.

CRISPR Technology Industry Overview

The CRISPR technology market is highly competitive and consists of several major players. Companies like Agilent Technologies, Cellecta Inc., GeneCopoeia Inc., GenScript, PerkinElmer Inc. (Horizon Discovery Group), Danaher Corporation (Integrated DNA Technologies (IDT)), Merck KGaA, New England Biolabs, Origene Technologies Inc., and Thermo Fisher Scientific, among others, hold a substantial market share in the market.

Additional Benefits:

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

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