3D Protein Structure Analysis Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, 2017-2027
Segmented By Component (Instruments, Consumables, Software), By Technique (X-ray Crystallography, Nuclear Magnetic Resonance (NMR) Spectroscopy, Cryo-Electron Microscopy (Cryo-EM), Small Angle X-Ray Scattering (SAXS)), By End User (Biotechnology & Pharmaceutical Companies, Academic & Research Institutions, Others), By company and By Region

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Report description:

The global 3D protein structure analysis market is anticipated to observe impressive growth during the forecast period 2023-2027. The major factors include a growing focus on automation and miniaturization in X-ray crystallography workflow, adoption of advanced technology, and rise in R&D activities that are augmenting the growth of the market. Protein structure is basically the three-dimensional arrangement of atoms in an amino acid. The three-dimensional structure of a protein at atomic resolution can be determined by crystallizing large proteins and then studying them by x-ray diffraction. Protein function is directly associated with the structure of that protein. The other factors supporting the market's growth are the rising demand for protein therapeutics, the rising prevalence of chronic, infectious, and protein-deficient diseases, the increase in the number of research laboratories, the high demand for personalized medicines, and increasing government grants. Also, the rising research and development (R&D) expenditure for drug discovery and development is facilitating the growth of the market.
Rising Focus on Automation and Miniaturization in X-Ray Crystallography Workflow
X-Ray crystallography is a technique by which the 3D structure of a protein can be obtained by X-ray diffraction, which helps to

know the functionality of the protein. Growing emphasis on automation and miniaturization of existing crystallography is augmenting the growth of the market. This automation and miniaturization of x-ray crystallography are positively influencing the workflow by being more effective and efficient in 3D protein structure analysis. For instance, the bio instrumentation team at LBNL collaborated with ALS, GNF's researcher, and Syrrx to develop a first-generation automated crystal recognition and alignment system intended to work at synchrotron beamlines.

Increase in R&D in Drug Discovery and Development

Over the past few years, rising R&D activities in drug discovery and development is bolstering the growth of the market. This is attributed to the rising incidences of chronic, protein-deficient diseases and infectious diseases. For instance, the Food and Drug Administration (FDA) approved an average of 38 new drugs from 2010 to 2019, which is 60% more than the prior decade's average. Protein analysis is a crucial phase in identifying potential candidates. Also, the subsequent rise in R&D expenditure is propelling the growth of the market globally. As per the Evaluate Pharma report, pharmaceutical R&D expenditure globally was valued at USD 136 billion in 2012, which raised to USD 186 billion in 2019.

Technological Advancements

The rise in technological developments in equipment for protein structure analysis is fueling the growth of the market. The growing need for high-resolution information on protein structures is driving the growth of the market. The advent of advanced technologies like X-ray-free electron lasers, D8 DISCOVER Plus X-ray Diffraction (XRD), and others are helpful due to the enhanced accuracy and speed in analyzing the 3D structure of the protein. For instance, in 2019, Amgen (US) and the University of Washington's Institute for Protein Design (IPD) collaborated to test new technologies and generate protein-building tactics that can be applied to seek new drugs.

Market Segmentation

The global 3D protein structure analysis market is segmented into components, techniques, end users, and company. Based on components, the market is divided into instruments, consumables, and software. Based on technique, the market is divided into x-ray crystallography, nuclear magnetic resonance (NMR) spectroscopy, cryo-electron microscopy (Cryo-EM), and small angle x-ray scattering (SAXS). Based on end-user, the market is divided into biotechnology & pharmaceutical companies, academic & research institutions, and others. In terms of country, the United States is expected to be a lucrative market in the forecast period due to the rising prevalence of chronic and infectious diseases in the country.

Market Players

Bruker Corporation, JEOL Ltd., Spectris plc, Thermo Fisher Scientific Inc., Merck KGaA, Schrodinger, Inc., Cambridge Isotope Laboratories, Inc., Rigaku Corporation, Jena Bioscience GmbH, and Dassault Systemes SE are some of the leading companies operating in the market.

Report Scope:

In this report, global 3D protein structure analysis market has been segmented into the following categories, in addition to the industry trends, which have also been detailed below:

-□3D Protein Structure Analysis Market, By Component:

o□Instruments

o□Consumables

o□Software

-□3D Protein Structure Analysis Market, By Component:

o□X-ray Crystallography

o□Nuclear Magnetic Resonance (NMR) Spectroscopy

o□Cryo-Electron Microscopy (Cryo-EM)

o□Small Angle X-Ray Scattering (SAXS)

-□3D Protein Structure Analysis Market, By End User:

o□Biotechnology & Pharmaceutical Companies

o□Academic & Research Institutions

o□Others

-□3D Protein Structure Analysis Market, By Region:

o North America
- United States
- Canada
- Mexico
o Asia-Pacific
- China
- India
- Japan
- Australia
- South Korea
o Europe & CIS
- Germany
- France
- United Kingdom
- Spain
- Italy
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 Global 3D Protein Structure Analysis Market

Available Customizations:

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).

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