

Plant Based Protein Expression Market by Type of Product (Biosimilars, Cell Therapies, Gene Therapies, Monoclonal Antibodies, Vaccines and Others), Type of Plant (Algae, Barley, Benth, Duckweed, Lettuce, Maize, Moss, Rice, Tomato, Tobacco and Wheat Germ), Type of Expression System (Stable Expression System and Transient Expression System), Type of Target Disease Indication (Cirrhotic Ascites, COVID-19, Cystic Fibrosis, Ebola Virus Infection, Fabry Disease, Gaucher Disease, Liver Cirrhosis, Influenza, and Peanut Allergy), Type of Therapeutic Area (Genetic Disorders, Infectious Disorders, Liver Disorders, Respiratory Disorders and Others), Drug (Elelyso, PALFORZIA, OsrHSA, PRX-102, Unnamed_1, Unnamed_2, PRX-110 and ZMapp), and Region (North America, Europe, Asia, Middle East and North Africa, Latin America and Rest of the World): Industry Trends and Global Forecasts, 2022-2035

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Abstracts

The plant based protein expression market is expected to reach USD 1.3 billion in 2022 anticipated to grow at a CAGR of 11.9% during the forecast period 2022-2035.

The increasing preference for biologics has experienced a significant surge, particularly in the wake of the COVID-19 pandemic. Presently, approximately 85% of drug candidates are formulated using mammalian cell cultures, facing several challenges such as pathogen introduction, scalability limitations, reduced productivity, and increased byproduct formation. Studies indicate that the current capacities of mammalian cell production might only meet 50% of the heightened demand for biologics resulting from the COVID-19 crisis.

Amid these challenges, advancements in synthetic organic chemistry have shed light on plant-based expression systems as a promising alternative. The engineering of plant hosts enables the production of proteins with consistent post-translational modifications, resulting in more effective biologics compared to those derived from mammalian or yeast-based cultures. Plant-based systems also offer increased safety by posing minimal risks of introducing human or animal pathogens. Furthermore, plant molecular farming facilitates rapid and large-scale production (several grams) of biologics within a shorter timeframe (4-8 weeks), particularly evident during the COVID-19 pandemic. Additionally, Good Manufacturing Practice (GMP) plant-based manufacturing facilities report lower operating costs (approximately 25% less) compared to other expression systems.

Pharmaceutical entities are actively embracing plant-based systems due to these advantageous features. These systems have enabled the development of various therapeutics, vaccines, enzymes, monoclonal antibodies, and nutritional proteins using transgenic or transient expression in plants or plant cell cultures. Currently, nearly 50 plant-based therapies are undergoing development or evaluation, with over 35 providers offering proprietary technologies to drug developers. The industry is witnessing numerous partnerships among various stakeholders to further advance plant-based therapies, driven by factors such as disease prevalence, escalating demand for biologics, and ongoing optimization endeavors.

Considering the rising prevalence of diseases, increasing demand for biologics, continuous advancements in product development, and the ongoing optimization of technology, the global plant-based protein expression market is poised for substantial growth in the forecast period.

Report Coverage

Executive summary includes the research insights about the current state and

future evolution of the plant-based biologics and expression systems market.

Introduction to the key concepts regarding plant-based expression system providers, including classifications, advantages, commonly used production systems, mechanisms, and recent developments.

A detailed analysis of over 35 plant-based expression system providers, covering market landscape, types of plants used, products, expression systems, developer details, and proprietary technologies.

A detailed analysis of more than 45 plant-based biologics, including their market landscape, development status, disease indications, therapeutic areas, types of products, developer landscape, and proprietary drug candidates.

Detailed profiles of leading companies involved in plant-based expression system technologies, covering company overviews, technology portfolios, recent developments, and future outlooks.

Recent collaborations and partnerships among stakeholders in the domain, covering various agreements and alliances from 2017-2021.

A company competitiveness analysis using a matrix and spider web representation, comparing key players in plant-based expression systems based on parameters like experience, portfolio strength, partnership activity, and company size.

Analysis of over 1,000 scientific articles related to plant-based biologics published between 2000-2021, highlighting research focus, trends, parameters like publication year, article types, journals, funding bodies, publishers, and authors.

A detailed market forecast analysis for the plant-based expression system market from 2022-2035, including market size, growth potential, distribution of opportunities based on product type, plant type, expression system, and region.

A detailed market forecast analysis for the plant-based biologics market from 2022-2035, including market size, growth potential, distribution of opportunities based on disease indications, therapeutic areas, specific drugs, and regions.

Executive insights from discussions with various key stakeholders in this market.

Key Market Companies

Medicago

Leaf Expression Systems

Eleva

iBIO

PlantForm

G+Flas Life Sciences

Kentucky Bioprocessing

Angany

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