

Mutagenicity Testing and Genotoxicity Testing Market by Type of Assay (In vivo, In vitro and Non-GLP / Screening), Assay / Test Offered (Comet Assay, Micronucleus Assay, Chromosomal Aberration Test, Genetic Mutation Test and Others), End User Industry (Chemical Industry, Healthcare Industry, Agriculture Industry, Cosmetic Industry and Other Industries) and Key Geographical Regions (North America, Europe, Asia-Pacific, Latin America, and Middle East and North Africa): Industry Trends and Global Forecasts, 2023-2035

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Abstracts

The mutagenicity testing and genotoxicity testing market is expected to reach USD 1.01 billion in 2023 anticipated to grow at a CAGR of 7% during the forecast period 2023-2035.

Genotoxicity signifies the potential of harmful agents across physical, chemical, and biological domains to inflict damage upon the genetic information housed within cells. This damage can lead to mutations, untimely cellular events, and direct DNA harm. Notably, these induced mutations have been linked to a range of disease indications, including oncological and genetic disorders. Moreover, alterations in genetic material can be passed on to successive cell generations. Similarly, mutagenicity refers to the induction of transmissible changes in an organism's genetic material, resulting in irreversible mutations. Consequently, conducting assessments for mutagenicity and genotoxicity stands as a critical element in assessing the safety of products, aiming to

prevent adverse effects on human health due to hazardous chemicals.

The importance of conducting mutagenicity and genotoxicity tests during the early stages of product scaling cannot be overstated. These evaluations serve as essential indicators for process engineers, guiding potential modifications to prevent the synthesis of intermediates carrying significant genetic damage potential. Presently, genotoxicity assays are widely used across various industries, including healthcare, chemicals, cosmetics, food, and agriculture. Their purpose lies in determining whether specific compounds induce harmful effects. However, due to the absence of a single test encompassing all relevant genotoxic endpoints, a range of in vivo and in vitro techniques is employed for safety assessments in the healthcare domain. Short-term tests (STTs) represent an initial step in genotoxicity testing. These assays, such as the Ames assay (conducted in different *Salmonella typhimurium* strains and *Escherichia coli*) and the micronucleus assay, are cost-effective, rapid, and capable of screening numerous substances. Their application extends to evaluating environmental chemicals, consumer products, and exploring the mechanisms of suspected carcinogens.

The rapid advancement of next-generation sequencing technologies has introduced new methods for genotoxicity testing, enabling direct analysis of genetic materials. However, due to limited chemistry capabilities and expertise, stakeholders increasingly rely on testing service providers to assess the safety of their compounds. These providers offer tailored genotoxicity testing services for toxicity evaluations in drug and medical device development, aligning with regulatory agency recommendations worldwide.

In summary, the growing demand for healthcare product testing, coupled with stringent safety requirements mandated by global regulatory bodies for mutagenicity and genotoxicity testing of substances intended for human use, has led to the emergence of lucrative opportunities for genotoxicity and mutagenicity testing service providers.

Report Coverage

Analyzing the mutagenicity and genotoxicity market based on assay types, test offerings, industry users, and key geographical regions.

Examining factors impacting market growth, including drivers, restraints, opportunities, and challenges.

Assessing market advantages, challenges, and competitive landscapes for key

players.

Forecasting revenue for market segments across five major regions.

Providing an executive summary of current and future states of genotoxicity and mutagenicity testing services, spanning short, mid, and long-term evolutions.

Offering an overview of genotoxicity and mutagenicity, covering negative impacts, testing methods, applications, market advancements, and future prospects.

Evaluating genotoxicity testing service providers based on establishment year, size, location, services, assays, industries served, and testing systems.

Conducting a comparative analysis of providers across North America, Europe, and Asia Pacific, highlighting leading companies by capabilities.

Creating detailed profiles of genotoxicity and mutagenicity testing service providers, encompassing company summaries, service portfolios, recent advancements, and future outlooks.

Analyzing publications on genotoxicity and mutagenicity, exploring publication years, types, popular publishers, journals, impact factors, and R&D trends.

Reviewing academic grants awarded for research since 2018, considering grant details, funding institutes, recipient organizations, and other relevant factors.

Examining recent partnerships in the testing market, focusing on partnership types, active players, and regional distributions.

Conducting an in-depth analysis of patents filed/granted since 2018, including types, publication years, regions, leading players, applicant types, and patent valuation based on citations.

Key Market Companies

Aurigene Pharmaceutical Services

Charles River Laboratories

GLR Laboratories

LabCorp

LSIM Safety Institute Sai LifeSciences

Syngene

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