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Global DNA-encoded Library Market Size study, by Product & Service (Products, Services), by Therapeutic Area (Oncology, Infectious Diseases), by Application (Hit Generation / Identification), by End Use and Regional Forecasts 2022-2032

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Abstracts

The Global DNA-encoded Library Market is valued at approximately USD 0.66 billion in 2023 and is projected to expand at a compelling CAGR of more than 13.40% during the forecast period 2024-2032. DNA-encoded libraries (DELs) have swiftly emerged as a disruptive screening technology, drastically transforming early-stage drug discovery by enabling the simultaneous evaluation of billions of small molecules against biological targets. This groundbreaking approach harnesses DNA sequences as unique barcodes, thereby encoding the identity of individual compounds and allowing rapid, high-throughput binding assays using next-generation sequencing. As the pharmaceutical industry relentlessly pursues novel molecular entities with higher specificity and therapeutic impact, DELs are revolutionizing hit identification workflows through their unmatched scalability, accuracy, and cost efficiency.

Driven by the escalating need for precision therapeutics—especially in oncology and infectious diseases—DELs have found profound utility in uncovering rare binders against difficult targets. The market is riding high on continuous innovation in library design, synthetic chemistry techniques, and target screening strategies. Furthermore, leading biopharmaceutical players are actively integrating DELs into their in-house discovery platforms or partnering with contract research organizations that specialize in DEL screening services. However, despite the compelling advantages, the market faces headwinds such as the complexity of downstream hit validation, challenges in linker design, and limitations with certain protein targets that impede DNA compatibility. Nonetheless, the industry is addressing these gaps through CRISPR integration,

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improved chemical diversity, and novel encoding formats.

As DELs evolve from a niche technology to a standard practice across medicinal chemistry pipelines, their role in reshaping drug discovery economics is becoming increasingly evident. Many organizations are adopting DEL services to complement traditional screening methods and enrich compound libraries with functionally diverse scaffolds. Advances in artificial intelligence and bioinformatics are further refining the selection of hits, expediting the transition from identification to lead optimization. The convergence of DELs with machine learning-enabled target deconvolution and protein modeling has the potential to unlock first-in-class compounds for previously undruggable targets. This synergy is enabling researchers to extrapolate actionable insights from massive datasets, streamlining development timelines and enhancing the probability of clinical success.

The growing traction of DNA-encoded library technologies is also being propelled by a paradigm shift toward outsourcing and collaboration. Startups and CROs specializing in DEL screening are forging strategic alliances with top pharmaceutical and biotech companies to extend platform capabilities. Moreover, as global healthcare systems struggle with rising R&D costs and declining ROI on new drug approvals, DELs are gaining attention for their ability to minimize resource expenditure while maximizing chemical space exploration. Emerging applications in antimicrobial resistance research, epigenetic modulation, and biomarker-driven screening are positioning DELs as a cornerstone of next-generation drug discovery ecosystems.

Geographically, North America dominates the Global DNA-encoded Library Market, driven by advanced infrastructure, robust pharmaceutical pipelines, and a high concentration of key industry players and research institutions. The United States, in particular, leads in innovation with widespread adoption of DEL platforms by both established companies and biotech innovators. Europe follows closely, supported by government-funded drug discovery programs and the proliferation of early-stage biotech firms across Germany, Switzerland, and the UK. Meanwhile, Asia Pacific is poised for accelerated growth, with countries like China and Japan investing heavily in genomic research and collaborative drug development initiatives. Latin America and the Middle East & Africa represent emerging frontiers, gradually integrating DELs through multinational partnerships and increased biomedical research funding.

Major market player included in this report are:

GlaxoSmithKline

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X-Chem

HitGen Inc.

Vipergen ApS

WuXi AppTec

Novartis AG

Nuevolution AB

Philochem AG

Amgen Inc.

Bayer AG

AbbVie Inc.

Merck & Co., Inc.

Pfizer Inc.

Roche Holding AG

Eli Lilly and Company

The detailed segments and sub-segment of the market are explained below:

By Product & Service

Products

Services

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By Therapeutic Area

- Oncology
- Infectious Diseases

By Application

- Hit Generation / Identification

By End Use

- Pharmaceutical and Biotechnology Companies
- Academic and Research Institutes
- Others

By Region:

North America

- U.S.
- Canada

Europe

- UK
- Germany
- France
- Spain

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- Italy
- ROE

Asia Pacific

- China
- India
- Japan
- Australia
- South Korea
- RoAPAC

Latin America

- Brazil
- Mexico

Middle East & Africa

- Saudi Arabia
- South Africa
- RoMEA

Years considered for the study are as follows:

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Historical year – 2022

Base year – 2023

Forecast period – 2024 to 2032

Key Takeaways:

Market Estimates & Forecast for 10 years from 2022 to 2032.

Annualized revenues and regional level analysis for each market segment.

Detailed analysis of geographical landscape with Country level analysis of major regions.

Competitive landscape with information on major players in the market.

Analysis of key business strategies and recommendations on future market approach.

Analysis of competitive structure of the market.

Demand side and supply side analysis of the market.

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Contents

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CHAPTER 4. GLOBAL DNA-ENCODED LIBRARY MARKET INDUSTRY ANALYSIS

CHAPTER 5. GLOBAL DNA-ENCODED LIBRARY MARKET SIZE & FORECASTS BY PRODUCT & SERVICE (2022-2032)

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CHAPTER 10. COMPETITIVE INTELLIGENCE

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CHAPTER 11. RESEARCH PROCESS

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