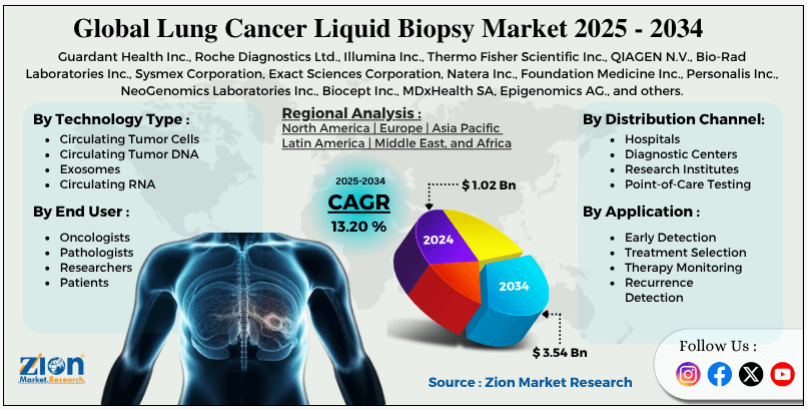
Lung Cancer Liquid Biopsy Market Size to Triple, Reaching USD 3.54 Billion by 2034 on 13.2% CAGR Surge

The global lung cancer liquid biopsy market was valued at approximately USD 1.02 billion in 2024 and is expected to reach around USD 3.54 billion by 2034



Lung Cancer Liquid Biopsy Market

PUNE, MAHARASHTRA, INDIA, September 4, 2025 /EINPresswire.com/ -- Lung cancer remains the leading cause of global cancer mortality, with more than 2.2 million new cases annually. Traditional tissue biopsy is invasive, time-consuming, and often impractical in advanced or metastatic disease. Liquid biopsy—non-invasive sampling of circulating tumor DNA (ctDNA), circulating tumor cells (CTCs), and exosomal biomarkers from blood or other biofluids—has emerged as a transformative diagnostic and monitoring tool.

> The global lung cancer liquid biopsy market was valued at approximately USD 1.02 billion in 2024 and is expected to reach around USD 3.54 billion by 2034,(CAGR) of roughly 13.20% between 2025 and 2034”
>
> *Deepak Rupnar*

The global lung cancer liquid biopsy market Size was valued at approximately USD 1.02 billion in 2024 and is expected to reach around USD 3.54 billion by 2034, growing at a compound annual growth rate (CAGR) of roughly 13.20% between 2025 and 2034.

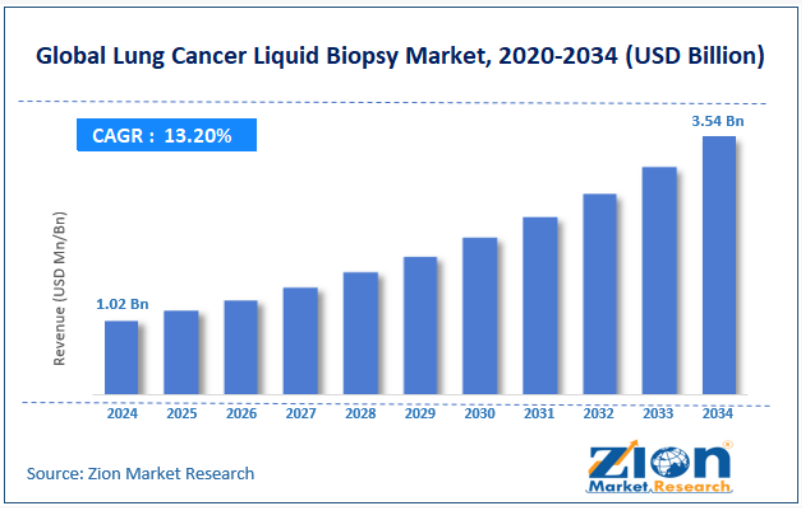
Access key findings and insights from our Report in this sample - https://www.zionmarketresearch.com/sample/lung-cancer-liquid-biopsy-market

1. Market Introduction

Liquid biopsy involves analyzing genetic, epigenetic, proteomic, and metabolomic information from tumor-derived materials circulating in biofluids. For lung cancer—where tumors are often heterogeneous and difficult to access—liquid biopsy offers:

Minimal invasiveness (simple blood draw)
Serial monitoring of treatment response and resistance mutations
Faster turnaround for therapeutic decision-making
Detection of minimal residual disease (MRD)

Integration of next-generation sequencing (NGS), digital PCR, and ultrasensitive platforms is enhancing analytical sensitivity, enabling earlier detection of actionable driver mutations (EGFR, ALK, ROS1, KRAS, MET, BRAF).



Lung Cancer Liquid Biopsy Market Size

Key Insights:
As per the analysis shared by our research analyst, the global lung cancer liquid biopsy market is estimated to grow annually at a CAGR of around 13.20% over the forecast period (2025-2034)
In terms of revenue, the global lung cancer liquid biopsy market size was valued at around USD 1.02 billion in 2024 and is projected to reach USD 3.54 billion by 2034.
The lung cancer liquid biopsy market is projected to grow significantly due to the increasing adoption of precision medicine approaches and expanding applications in early cancer detection.
Based on technology type, circulating tumor DNA leads the segment and will continue to dominate the global market.
Based on the application, treatment selection is expected to lead the market.
Based on the distribution channel, hospitals are anticipated to command the largest market share.
Based on end-users, oncologists are expected to lead the market during the forecast period.
Based on region, North America is projected to lead the global market during the forecast period.

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2. Market Dynamics
2.1 Key Growth Drivers
Rising Lung Cancer Incidence
Aging populations, smoking prevalence, and air pollution sustain a high disease burden worldwide.
Shift Toward Personalized Medicine

Targeted therapies (EGFR-TKIs, ALK inhibitors) require molecular profiling—liquid biopsy enables real-time genotyping.

Technological Advancements
Ultra-deep sequencing, digital droplet PCR, microfluidics increase analytical sensitivity to detect low variant allele frequency (VAF) mutations.
Clinical Guidelines & Reimbursement
Increasing regulatory acceptance (FDA approvals of Guardant360 CDx, FoundationOne Liquid CDx) promotes adoption.
Need for Non-Invasive Longitudinal Monitoring
Tissue re-biopsy is often unfeasible; liquid biopsy enables repeat testing throughout treatment.

2.2 Challenges
Analytical Standardization: Lack of uniform assay validation across laboratories.
False Negatives/Positives in low tumor burden or clonal hematopoiesis.
Cost & Reimbursement Barriers in low- and middle-income countries.
Data Interpretation Complexity: Multi-gene panels generate variant of unknown significance (VUS) findings.

2.3 Opportunities
Screening & Early Detection: Population-level studies integrating ctDNA + radiomics.
Minimal Residual Disease (MRD) Monitoring post-surgery or chemoradiation.
Artificial Intelligence (AI) Integration for multi-omics data interpretation.
Point-of-Care Microfluidics for rapid results in community oncology settings.

3. Market Segmentation
3.1 By Biomarker
Circulating Tumor DNA (ctDNA) – Dominant; companion diagnostics for EGFR T790M, KRAS G12C, etc.
Circulating Tumor Cells (CTCs) – Prognostic applications, research utility.
Exosomes & Extracellular Vesicles – Emerging; rich RNA and protein cargo.
Others (methylation, microRNA, proteomics) – Exploratory but promising.

3.2 By Technology
Next-Generation Sequencing (NGS) – High multiplexing, comprehensive profiling.
Digital PCR / Droplet Digital PCR (ddPCR) – Ultra-sensitive targeted mutation detection.
PCR-Based Assays (real-time, ARMS) – Rapid, cost-effective for known mutations.
Microarray & Other Platforms – MRD studies, biomarker discovery.

3.3 By Clinical Application
Early Detection & Screening – Low-dose CT + ctDNA risk stratification.
Prognosis & Minimal Residual Disease – Recurrence prediction.
Therapy Selection & Monitoring – Detecting driver mutations and resistance mechanisms.

Clinical Trials & Research – Surrogate endpoints, tumor evolution studies.

3.4 By End User
Hospitals & Cancer Centers – High-volume testing.
Reference Laboratories – Centralized NGS, companion diagnostics.
Academic & Research Institutes – Biomarker discovery, translational studies.
Pharma & Biotech Companies – Drug development, clinical trial enrollment.

4. Regional Analysis
4.1 North America
U.S. Leadership: Home to Guardant Health, Foundation Medicine, Thermo Fisher Scientific.
Favorable FDA approvals and CMS reimbursement for liquid biopsy assays.
High awareness among oncologists and payer adoption.

4.2 Europe
Germany, UK, France leading with genomic medicine initiatives.
European Society for Medical Oncology (ESMO) supports ctDNA for treatment monitoring.
Harmonization efforts via In Vitro Diagnostic Regulation (IVDR).

4.3 Asia-Pacific

China: Rapid uptake via precision medicine programs, high lung cancer prevalence.
Japan & South Korea: Government-backed NGS panel reimbursement.
APAC projected as fastest-growing region due to patient pool, clinical trial activity.

4.4 Latin America
Expanding private oncology centers in Brazil, Mexico, Chile.
Limited but improving access to molecular diagnostics.

4.5 Middle East & Africa
Rising cancer incidence in GCC countries, nascent NGS infrastructure.
Partnerships with global reference labs to build regional capacity.

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5. Competitive Landscape

The market is moderately consolidated with dominant NGS assay providers and emerging startups.

Key Players

Guardant Health, Inc.
F. Hoffmann-La Roche AG (Foundation Medicine)
Thermo Fisher Scientific, Inc.
Bio-Rad Laboratories, Inc.
Qiagen N.V.
Natera, Inc.
Illumina, Inc.
Sysmex Corporation
Biocept, Inc.
GRAIL, LLC (Exact Sciences)

Strategic Initiatives
FDA & CE-Mark Approvals for expanded indications.
Collaborations with pharma for companion diagnostics.
Cloud-Based Analytics to manage NGS datasets.
AI-Driven Assay Development for low-frequency mutation detection.

6. Industry Trends
Multi-Omics Convergence – Integrating genomic + epigenomic + proteomic signals for robust early detection.
Liquid Biopsy + Radiomics – Combining ctDNA trends with imaging AI for tumor burden estimation.
Decentralized Testing – Point-of-care ddPCR devices for community oncology.
Value-Based Oncology – Payers incentivize tests that improve outcomes and reduce unnecessary therapies.
Regulatory & Ethical Frameworks – Governance of genomic data privacy, incidental findings.

7. Outlook (2025–2034)
Market Trajectory: CAGR 13.2 %, revenue USD 3.54 billion by 2034.
MRD & Screening Expansion: Early detection programs to broaden market beyond advanced disease.
AI & Automation: Boosting analytical accuracy and interpretive efficiency.
Global Equity: Efforts to lower cost and increase accessibility in low-resource regions.
Consolidation & Partnerships: Integration across device, reagent, and analytics providers.

8. Conclusion

Liquid biopsy has shifted from a research tool to clinical standard for advanced lung cancer genotyping and monitoring. With rapid assay evolution, declining sequencing costs, and payer alignment, adoption is accelerating across geographies. Stakeholders investing in NGS infrastructure, clinical validation, and global distribution networks will capitalize on the next decade of precision oncology growth.

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