

Prostate Cancer Biomarkers Market Size, Share & Trends Analysis Report By Type (Genetic Biomarkers, Cell-based Biomarkers, Metabolomic Biomarkers), By Application, By End-use, By Region, And Segment Forecasts, 2025 - 2030

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Abstracts

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Prostate Cancer Biomarkers Market Growth & Trends

The global prostate cancer biomarkers market size is expected to reach USD 9.8 billion by 2030, registering a CAGR of 13.1% from 2025 to 2030, according to a new report by Grand View Research, Inc. The market is undergoing rapid evolution driven by the increasing demand for precision diagnostics and the limitations of conventional screening methods like PSA testing. PSA, while widely used, has low specificity, often leading to overdiagnosis and overtreatment. As a result, there is a significant shift towards molecular and genomic biomarkers that can offer improved diagnostic accuracy and guide clinical decisions. Emerging biomarkers such as PCA3 (Prostate Cancer Antigen 3), 4Kscore, and ConfirmMDx have demonstrated superior performance in risk stratification and biopsy decision support. These tests are increasingly being integrated into clinical practice to reduce unnecessary biopsies and improve patient outcomes.

A key market driver is the growing focus on personalized medicine. Genomic classifiers like Decipher and Oncotype DX GPS help determine the aggressiveness of prostate tumors and inform treatment planning, especially in early-stage patients deciding between active surveillance and intervention. Liquid biopsy-based technologies are also gaining attention for their non-invasive nature, with urine-based tests like

SelectMDx and ExoDx offering clinically actionable insights for patients with elevated PSA. These innovations are particularly relevant in cases where traditional biopsies carry risks or yield inconclusive results.

Technological advancements in next-generation sequencing (NGS) and transcriptomics are further accelerating biomarker discovery. For example, studies have identified gene fusions such as TMPRSS2-ERG and mutations in BRCA1/2 and ATM as significant markers for prognosis and therapeutic guidance. The increasing use of these biomarkers in selecting patients for targeted therapies like PARP inhibitors reflects the rising importance of companion diagnostics in the treatment ecosystem. Moreover, metabolomic biomarkers, which analyze small-molecule metabolic changes associated with tumor progression, are emerging as promising tools for early detection and monitoring.

However, the market still faces several challenges. Standardization across biomarker assays remains limited, and there is a lack of consensus among clinicians regarding which tests to adopt and at what clinical stages. Reimbursement issues and cost concerns can hinder the routine use of advanced biomarker tests, particularly in regions with constrained healthcare budgets. Furthermore, regulatory pathways for biomarker approval are often lengthy, which can delay commercial availability. Even as newer tests enter the market, widespread clinical adoption requires large-scale validation studies and integration into existing clinical workflows.

Despite these barriers, the prostate cancer biomarker industry presents notable growth opportunities. Collaborations between academia and industry are intensifying, aimed at discovering and validating novel biomarker panels. With increasing awareness of the limitations of PSA and growing emphasis on value-based care, there is strong momentum to shift toward more informative, less invasive diagnostics. In this context, biomarkers like AR-V7, used for monitoring treatment resistance in advanced prostate cancer, illustrate the potential of biomarker-guided therapy selection.

As the field continues to advance, prostate cancer diagnostics are moving toward a more integrated and individualized model, where molecular insights guide not only early detection but also therapeutic decisions and long-term management strategies.

Some of the key players in the market are Exact Sciences, Myriad Genetics, Bio-Techne, Olympus Corporation, OPKO Health. These players are involved in various strategic initiatives such as product launch and approval in order to cater to a global clientele. For instance, in December 2024, Myriad Genetics' Prolaris test

continues to be recognized by the National Comprehensive Cancer Network (NCCN) as an Advanced Tool for prostate cancer prognosis. It remains included in the NCCN guidelines with a Category 2A evidence level, indicating strong support (85%) from the NCCN prostate panel. This classification reinforces Prolaris' clinical relevance in helping guide treatment decisions based on tumor aggressiveness.

Prostate Cancer Biomarker Market Report Highlights

Based on type, protein biomarkers accounted for largest revenue share of 57.73% in 2024. The protein biomarkers segment in the prostate cancer biomarkers market is driven by the widespread clinical use of PSA and PHI tests, rising prostate cancer prevalence, and strong clinical guideline support. Technological advances in multiplex assays and risk stratification tools like the 4Kscore enhance diagnostic accuracy. Additionally, increased demand for non-invasive, cost-effective, and point-of-care testing solutions fuels further growth in this segment across both developed and emerging markets.

Based on application screening and early detection dominated the market and accounted for the largest share of 45.14% in 2024. The screening and early detection segment in the market is driven by rising disease prevalence, aging populations, and adoption of non-invasive tests. For example, PSA testing remains a global standard, while PHI (Prostate Health Index) and the 4Kscore offer improved specificity, reducing unnecessary biopsies. Programs like the U.S. Preventive Services Task Force (USPSTF) recommendation for PSA testing in men aged 55–69 further boost demand. Increased public awareness and improved access to diagnostic services also support growth in this segment.

Based on end use, hospitals and diagnostic laboratories segment dominated the market and accounted for the largest share of 63.24% in 2024. Hospitals and diagnostic laboratories are key drivers in the prostate cancer biomarker industry due to their central role in patient diagnosis, biopsy evaluation, and treatment planning. Increasing patient volumes, availability of advanced diagnostic infrastructure, and demand for accurate, early-stage detection tests like PSA, PHI, and ConfirmMDx fuel market growth. Additionally, integration of biomarker testing

integrated routine urology workflows and hospital-based cancer screening programs further enhances test adoption and market expansion in both developed and emerging regions.

North America dominates the prostate cancer biomarkers market due to advanced diagnostic capabilities, early adoption of precision medicine, and supportive regulatory frameworks. Biomarker-based tests such as ExoDx Prostate (urine-based exosomal RNA test by Bio-Techne) and SelectMDx (mRNA test by MDxHealth) are widely utilized for biopsy decision-making. Additionally, clinical guidelines from the National Comprehensive Cancer Network (NCCN) endorse biomarker usage. Growing investment in genomics and partnerships between academic centers and biotech firms continue to drive innovation and biomarker adoption across the region.

Asia Pacific region is expected to witness fastest growth with a CAGR of 14.4% over the forecast period from 2025 to 2030, due to increasing cancer awareness, improving healthcare infrastructure, and rising healthcare expenditure in countries like China, India, and Japan. Expanding access to PSA screening and newer tests such as PHI and 4Kscore is driving early detection. Local governments are launching national cancer screening initiatives, and growing investments in precision medicine and molecular diagnostics are boosting biomarker adoption. Collaborations between regional hospitals and biotech firms are further fueling innovation and market expansion.

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