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Precision Oncology & Cancer Immunotherapy Market Forecasts to 2034 – Global Analysis By Therapy Type (Immune Checkpoint Inhibitors, CAR-T Cell Therapy, Cancer Vaccines, Monoclonal Antibodies, Targeted Small Molecule Therapy and Other Therapy Types), Biomarker, Cancer Type, Technology, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Precision Oncology & Cancer Immunotherapy Market is accounted for $131.06 billion in 2026 and is expected to reach $295.58 billion by 2034 growing at a CAGR of 10.7% during the forecast period. Precision oncology and cancer immunotherapy are advanced approaches in oncology that focus on personalized and immune-based cancer treatment. Precision oncology uses genomic profiling and biomarkers to tailor therapies to the specific molecular characteristics of a patient's tumor, improving treatment effectiveness and minimizing side effects. Cancer immunotherapy, including immune checkpoint inhibitors and cell-based therapies, stimulates the body's immune system to recognize and destroy cancer cells. Together, these approaches enhance clinical outcomes, enable targeted interventions, and represent a shift toward individualized, biology-driven cancer care, improving survival rates and transforming treatment strategies across various malignancies.

Market Dynamics:

Driver:

Rising cancer prevalence globally

Increasing incidence of cancers such as lung, breast, and colorectal is creating urgent demand for advanced treatment options. Personalized therapies allow clinicians to tailor interventions based on genetic, molecular, and immunological profiles, improving efficacy and reducing side effects. Immunotherapy approaches, including checkpoint

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inhibitors and CAR-T therapies, are gaining traction as they offer durable responses in patients resistant to conventional treatments. The growing burden of cancer worldwide has accelerated investments in precision medicine and biomarker-driven research. Healthcare systems are prioritizing personalized oncology to improve survival rates and reduce healthcare costs.

Restraint:

High cost of personalized treatments

Precision oncology and immunotherapy often involve complex diagnostic tests, advanced biologics, and customized treatment regimens, all of which drive up expenses. Many healthcare systems, particularly in developing regions, struggle to provide widespread access due to limited reimbursement frameworks. Patients face financial toxicity, with out-of-pocket costs becoming a barrier to adoption. Pharmaceutical companies are under pressure to balance innovation with affordability, but pricing remains a challenge. While ongoing research aims to reduce costs through scalable manufacturing and improved diagnostics, affordability issues persist.

Opportunity:

Development of targeted immunotherapies

Advances in genomics and proteomics are enabling the identification of novel biomarkers and therapeutic targets. Immunotherapies such as monoclonal antibodies, cancer vaccines, and engineered T-cell therapies are increasingly being tailored to individual patient profiles. These approaches offer improved efficacy and reduced toxicity compared to traditional chemotherapy. Pharmaceutical companies are investing heavily in R&D collaborations to accelerate innovation in this space. Regulatory agencies are also supporting fast-track approvals for breakthrough therapies, enhancing market potential.

Threat:

Competition from conventional cancer therapies

Chemotherapy, radiation, and surgery remain the standard of care in many regions due to their established efficacy and lower costs. Physicians and patients may be hesitant to adopt newer, more expensive personalized treatments without long-term evidence of superiority. In resource-constrained settings, conventional therapies continue to dominate due to affordability and accessibility. This entrenched reliance on traditional approaches can slow the uptake of personalized oncology solutions. Overcoming this threat requires robust clinical data, cost-effectiveness studies, and greater awareness among healthcare providers.

Covid-19 Impact:

The COVID-19 pandemic had a mixed impact on the personalized oncology and immunotherapy market. On one hand, disruptions in clinical trials and supply chains delayed the development and delivery of new therapies. Many cancer patients

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experienced treatment interruptions due to hospital resource constraints. On the other hand, the pandemic accelerated adoption of digital health and telemedicine, supporting remote patient monitoring and personalized care delivery. Pharmaceutical companies adapted by leveraging decentralized trials and digital platforms to continue research. Post-pandemic recovery has reignited investments in oncology R&D, with personalized immunotherapies regaining momentum.

The lung cancer segment is expected to be the largest during the forecast period

The lung cancer segment is expected to account for the largest market share during the forecast period as rising cancer prevalence globally has made lung cancer one of the most urgent areas for personalized treatment development. Lung cancer remains the leading cause of cancer-related deaths worldwide, driving demand for innovative therapies. Personalized approaches, including biomarker-driven targeted therapies and immunotherapies, are increasingly being adopted to improve survival rates. Advances in diagnostics such as liquid biopsies and genomic sequencing are enhancing early detection and treatment personalization. Pharmaceutical companies are focusing heavily on lung cancer pipelines due to its high clinical and economic burden.

The cancer research institutes segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the cancer research institutes segment is predicted to witness the highest growth rate due to rising cancer prevalence globally, which has intensified demand for advanced research and innovation in personalized therapies. Institutes are leading efforts in biomarker discovery, immunotherapy development, and precision diagnostics. Collaborations with pharmaceutical companies and government agencies are accelerating clinical trial activity. Research institutes also play a critical role in training oncologists and disseminating knowledge about personalized treatment approaches. As cancer prevalence rises, research institutes will remain at the forefront of innovation, driving rapid growth.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share owing to advanced healthcare infrastructure and rising cancer prevalence globally, which has heightened demand for personalized oncology solutions. The U.S. leads in adoption of precision medicine, supported by strong R&D investments and favorable reimbursement policies. Major pharmaceutical companies and research institutes are headquartered in the region, driving innovation. Regulatory agencies such as the FDA provide fast-track approvals for breakthrough therapies, further boosting adoption. The region’s dominance is expected to persist, supported by ongoing innovation and strong healthcare spending.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest

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CAGR driven by rapid healthcare digitization and rising cancer prevalence globally, particularly in emerging economies. Countries such as China, India, and Japan are witnessing increasing cancer incidence, creating urgent demand for personalized therapies. Governments are investing in oncology infrastructure and supporting clinical research initiatives. Growing collaborations between local institutes and global pharmaceutical companies are accelerating innovation. Rising disposable incomes and improving healthcare access are expanding patient adoption of advanced treatments. The region also benefits from increasing awareness of precision medicine and immunotherapy.

Key players in the market

Some of the key players in Precision Oncology & Cancer Immunotherapy Market include Roche Holding AG, Bristol-Myers Squibb Company, Merck & Co., Inc., Novartis AG, Pfizer Inc., Johnson & Johnson, AstraZeneca plc, Gilead Sciences Inc., Amgen Inc., Regeneron Pharmaceuticals, BeiGene Ltd., Moderna Inc., BioNTech SE, Iovance Biotherapeutics, Bluebird Bio Inc. and Kite Pharma.

Key Developments:

In March 2026, Johnson & Johnson's Janssen unit introduced a personalized immunotherapy platform combining tumor-infiltrating lymphocytes (TILs) with AI-driven patient selection. The therapy targets advanced ovarian cancer, offering tailored immune responses. J&J's innovation reinforces its commitment to precision oncology, integrating cell therapy with digital health tools for improved patient outcomes.

In February 2026, Roche advanced its personalized oncology portfolio by launching a next-generation companion diagnostic platform integrated with its immunotherapy pipeline. The system enables real-time biomarker profiling for individualized treatment selection in breast and lung cancers. Roche's expansion into AI-driven diagnostics strengthens its leadership in precision oncology, aligning with its strategy to deliver tailored immunotherapy solutions across global markets.

In June 2025, Bristol-Myers Squibb expanded its immuno-oncology franchise with FDA approval of a novel PD-1 inhibitor combination therapy for advanced melanoma. The therapy leverages biomarker-driven patient stratification, enhancing survival outcomes. BMS continues to invest in personalized immunotherapy approaches, reinforcing its competitive edge in checkpoint inhibitor markets and broadening its reach in precision cancer care.

Therapy Types Covered:

- Immune Checkpoint Inhibitors
- CAR-T Cell Therapy

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- Cancer Vaccines
- Monoclonal Antibodies
- Targeted Small Molecule Therapy
- Other Therapy Types

Biomarkers Covered:

- Genomic Biomarkers
- Proteomic Biomarkers
- Tumor Mutational Burden (TMB)
- PD-L1 Expression
- Other Biomarkers

Cancer Types Covered:

- Lung Cancer
- Breast Cancer
- Colorectal Cancer
- Melanoma
- Hematologic Cancers
- Other Cancer Types

Technologies Covered:

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- Next-Generation Sequencing (NGS)
- PCR-Based Testing
- Flow Cytometry
- Gene Editing Technologies
- Other Technologies

End Users Covered:

- Hospitals
- Cancer Research Institutes
- Specialty Oncology Clinics
- Diagnostic Laboratories
- Other End Users

Regions Covered:

- North America
  - United States
  - Canada
  - Mexico
- Europe
  - United Kingdom
  - Germany

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- France
- Italy
- Spain
- Netherlands
- Belgium
- Sweden
- Switzerland
- Poland
- Rest of Europe

Asia Pacific

- China
- Japan
- India
- South Korea
- Australia
- Indonesia
- Thailand
- Malaysia
- Singapore

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- Vietnam
- Rest of Asia Pacific

South America

- Brazil
- Argentina
- Colombia
- Chile
- Peru
- Rest of South America

Rest of the World (RoW)

- Middle East
  - Saudi Arabia
  - United Arab Emirates
  - Qatar
  - Israel
  - Rest of Middle East
- Africa
  - South Africa
  - Egypt
  - Morocco

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Rest of Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:
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  - Comprehensive profiling of additional market players (up to 3)
  - SWOT Analysis of key players (up to 3)
- Regional Segmentation
  - Market estimations, Forecasts and CAGR of any prominent country as

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per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) are also represented in the same manner as above.

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