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Personalized Cancer Vaccines Market Forecasts to 2034 – Global Analysis By Vaccine Type (Neoantigen-based Vaccines, Dendritic Cell Vaccines, mRNA-based Vaccines, Peptide-based Vaccines, DNA-based Vaccines, Tumor Cell Vaccines, and Other Vaccine Types), Delivery Method, Technology, Application, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Personalized Cancer Vaccines Market is accounted for $1.4 billion in 2026 and is expected to reach $9.8 billion by 2034 growing at a CAGR of 27.4% during the forecast period. Personalized cancer vaccines refer to individualized immunotherapeutic constructs designed to prime the patient's immune system against tumor-specific antigens derived from genomic sequencing of their own malignant cells. They encompass neoantigen-based peptide formulations, mRNA delivery constructs, dendritic cell preparations, and DNA vaccine vectors. Manufactured through bioinformatics-driven neoantigen prediction and rapid manufacturing workflows, they are administered to melanoma, lung cancer, and other solid tumor patients, stimulating cytotoxic T-cell responses against patient-specific cancer mutations.

Market Dynamics:

Driver:

mRNA Technology Maturation

mRNA technology maturation is a transformative driver enabling scalable, rapid manufacturing of personalized neoantigen cancer vaccines that previously required

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months of production. Lipid nanoparticle delivery optimization validated through COVID-19 vaccine programs has directly transferred to oncology vaccine formulation, reducing manufacturing cycle times and improving payload stability. Major pharmaceutical entities are accelerating personalized mRNA cancer vaccine pipeline investments, generating late-stage clinical asset portfolios and substantiating commercial pathway feasibility.

Restraint:

Manufacturing Complexity and Cost

Manufacturing complexity and prohibitive per-patient production costs constrain personalized cancer vaccine accessibility, as each vaccine requires individual genomic sequencing, neoantigen prioritization, and bespoke peptide or mRNA synthesis within clinically meaningful timeframes. Sophisticated GMP biomanufacturing infrastructure and highly skilled personnel requirements elevate fixed costs substantially. These barriers disproportionately restrict access in healthcare systems with limited oncology drug budget flexibility, confining current commercial viability to premium market segments.

Opportunity:

Combination Immunotherapy Protocols

Combination immunotherapy protocols integrating personalized cancer vaccines with checkpoint inhibitors present a major opportunity, as clinical evidence increasingly demonstrates synergistic tumor response rates exceeding either modality alone. Oncology physicians and payers are showing growing acceptance of combination regimens where response durability justifies combined costs. Regulatory agencies are streamlining accelerated approval frameworks for combination oncology approaches, creating faster commercial pathways for personalized vaccine developers partnering with established checkpoint inhibitor manufacturers.

Threat:

Competitive Checkpoint Inhibitor Landscape

The entrenched competitive landscape of approved checkpoint inhibitors represents a significant threat to personalized cancer vaccine commercial adoption, as oncologists

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rely on well-characterized agents with established reimbursement and clinical guideline inclusion. Demonstrating superior efficacy versus existing standard of care in pivotal trials requires substantial investment and carries meaningful regulatory risk. Patient and physician resistance to experimental personalized approaches in lieu of proven therapies further constrains near-term uptake beyond clinical trial settings.

Covid-19 Impact:

COVID-19 profoundly accelerated personalized cancer vaccine development by validating mRNA delivery platforms and lipid nanoparticle manufacturing at scale. Pandemic-era partnerships between vaccine technology developers and oncology specialists created technology transfer opportunities that compressed development timelines. Post-pandemic, regulatory agencies introduced streamlined adaptive trial guidance applicable to personalized oncology therapeutics, structurally benefiting the pipeline.

The DNA-based vaccines segment is expected to be the largest during the forecast period

The DNA-based Vaccines segment is expected to account for the largest market share during the forecast period, due to their stability advantages over mRNA constructs, established manufacturing processes, and growing late-stage clinical pipeline across melanoma and lung cancer indications. DNA vaccines do not require ultra-cold storage, improving logistical feasibility for diverse clinical settings. Multiple Phase III trials evaluating personalized DNA vaccine platforms in combination with checkpoint inhibitors are generating positive interim data supporting commercial expectations.

The genomic sequencing segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the Genomic Sequencing segment is predicted to witness the highest growth rate, driven by rapidly declining whole-exome sequencing costs and expanding clinical genomics infrastructure in major healthcare systems. Real-world genomic sequencing adoption for tumor profiling is accelerating as reimbursement coverage expands in the U.S. and Europe. The integration of next-generation sequencing workflows directly into hospital oncology pathways is generating the neoantigen data inputs essential for personalized vaccine manufacturing pipelines.

Region with largest share:

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During the forecast period, the North America region is expected to hold the largest market share, due to advanced clinical trial infrastructure, leading biopharmaceutical investment in personalized oncology, and supportive regulatory environments including FDA breakthrough therapy and accelerated approval designations. The United States hosts the majority of late-stage personalized cancer vaccine clinical programs. High oncology drug expenditure and insurance coverage for genomic profiling create commercial conditions supporting early market penetration for approved personalized vaccine products.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, due to rapidly expanding oncology patient populations, government investments in genomic medicine infrastructure, and growing clinical trial activity across China, Japan, and South Korea. National cancer control programs in major Asia Pacific economies are integrating genomic tumor profiling into standard diagnostic workflows. Accelerated regulatory approval pathways for innovative oncology biologics in Japan and China are facilitating faster market entry for personalized vaccine developers.

Key players in the market

Some of the key players in Personalized Cancer Vaccines Market include Moderna Inc., BioNTech SE, Gritstone bio, Inc., CureVac N.V., Roche Holding AG, Merck & Co., Inc., Pfizer Inc., AstraZeneca plc, GlaxoSmithKline plc, Novartis AG, Sanofi S.A., Genentech Inc., Immatics N.V., ISA Pharmaceuticals, Neon Therapeutics, Nouscom AG, Transgene SA, and Adaptimmune Therapeutics.

Key Developments:

In March 2026, Moderna Inc. announced expansion of its personalized cancer vaccine manufacturing capacity through a new U.S.-based GMP production facility partnership.

In February 2026, Roche Holding AG entered a co-development agreement to evaluate personalized neoantigen vaccine combination regimens with atezolizumab across multiple solid tumor types.

In January 2026, BioNTech SE reported positive Phase II data for its individualized neoantigen mRNA cancer vaccine combined with pembrolizumab in advanced

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melanoma patients.

In October 2025, Gritstone bio, Inc. initiated a Phase II clinical trial evaluating its GRANITE neoantigen cancer vaccine in combination with checkpoint immunotherapy for colorectal cancer.

Vaccine Types Covered:

- Neoantigen-based Vaccines
- Dendritic Cell Vaccines
- mRNA-based Vaccines
- Peptide-based Vaccines
- DNA-based Vaccines
- Tumor Cell Vaccines
- Other Vaccine Types

Delivery Methods Covered:

- Intravenous
- Subcutaneous
- Intradermal
- Intramuscular
- Nanoparticle Delivery
- Lipid Nanoparticles

Technologies Covered:

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- Genomic Sequencing
- Next-Generation Sequencing (NGS)
- Bioinformatics Platforms
- Immunoinformatics
- AI-driven Vaccine Design
- Single-cell Analysis

Applications Covered:

- Melanoma
- Lung Cancer
- Breast Cancer
- Prostate Cancer
- Colorectal Cancer
- Hematological Malignancies
- Other Applications

End Users Covered:

- Hospitals
- Oncology Clinics
- Research Institutes
- Biotech Companies

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- Pharma Companies
- Clinical Trial Centers
- Other End Users

Regions Covered:

- North America
  - United States
  - Canada
  - Mexico
- Europe
  - United Kingdom
  - Germany
  - France
  - Italy
  - Spain
  - Netherlands
  - Belgium
  - Sweden
  - Switzerland
  - Poland

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- Rest of Europe
- Asia Pacific
  - China
  - Japan
  - India
  - South Korea
  - Australia
  - Indonesia
  - Thailand
  - Malaysia
  - Singapore
  - Vietnam
  - Rest of Asia Pacific
- South America
  - Brazil
  - Argentina
  - Colombia
  - Chile
  - Peru

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- 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
    - 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, 3032 and 2034
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

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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:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

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 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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Contents

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13 COMPANY PROFILES

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List Of Tables

LIST OF TABLES

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

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