

MARKET REPORT



Global Cancer Immunotherapy Market Analysis & Forecast to 2022 Antibody Drug Conjugates (ADCs), Bispecific Monoclonal Antibodies, Cancer Vaccines, Cytokines, Interferons, Chimeric Antigen Receptor (CAR) T-Cell Therapy, PD-1/PD-L1 inhibitors, Dendritic Cells, Checkpoint Inhibitors, Adopted Cell Therapy (ACT) & IDO Inhibitors

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Within the cancer therapeutics space, which today is worth over \$100 billion globally, immunotherapeutic drugs have gained worldwide acceptance. This is because they are targeted therapeutics that have high specificity for cancer cells. Today, cancer immunotherapy drugs have captured nearly 50% of the overall oncology drugs market, generating about \$54 billion in 2016 alone and are forecast to surpass \$100 billion in 2022. This report describes the evolution of such a huge market in 20 chapters supported by over 180 tables and figures in 340 pages.

- An overview of cancer immunotherapy that includes: monoclonal antibodies, ADC's, cancer vaccines and non-specific cancer immunotherapies and CAR T therapies.
- Focus on current trends in cancer immunotherapies that include: anti-PD-1 and anti-PDL1 drugs, Dendritic cell vaccines, T-cell therapies and cancer vaccines.
- Insight into the challenges faced by drug developers, particularly about the success vs. failure ratios in developing cancer immunotherapy drugs.
- Descriptions of more than 23 cancer immunotherapeutics approved and used as targeted drugs
- Insight into the various immunotherapeutics available for specific cancer types.
- Description and data for the prevalence of cancer types that are addressed by cancer immunotherapeutics.
- Overall global cancer therapeutics market, leading market players and the best selling cancer drugs.
- Detailed account of the market for cancer immunotherapeutics by geography, indication, company and individual drugs.
- Profiles, marketed products and products in the pipeline of 79 companies that are located globally
- Summary table to identify the category of immunotherapy drug offered by the 79 companies.
- Specific chapter on the CAR-T industry detailing manufacturing, regulations and pricing

Key Questions Answered in this Report

- What is the global market for cancer immunotherapeutics by product class such as MAbs, vaccines and non-specific immunotherapies, through 2022?
- What is the global market for cancer immunotherapeutics by geography, through 2022?

- What is the global market for cancer immunotherapeutics by indication, through 2022?
- What is the global market for MABs by type such as naked MABs and ADCs, through 2022?
- What are the market values for Herceptin, Avastin, Erbitux, Yervoy, Mabthera, Adectris, and Keytruda?
- What is the global market for cancer vaccines?
- What is the global market for cytokines in cancer immunotherapy?
- The projected market values for Nivolumab, Tecentriq, DCVax-L, Imfinzi?
- What immunotherapies were approved between 1986 and 2017?
- What monoclonal antibodies (MABs) were approved by the FDA to treat different types of cancers?
- What are naked MABs and how many of them have been approved by the FDA?
- What are antibody-drug conjugates (ADCs) and how many of them are available in the market?
- What are the common cytotoxic “wareheads” used in ADCs?
- What are the important clinical assets in ADCs?
- How many bispecific MABs are in late-stage development?
- What are the common side effects of MABs in cancer immunotherapy?
- What are cancer vaccines and how many of them have been licensed to be marketed?
- How many cytokines have been approved for being used in cancer immunotherapy?
- What are the major checkpoint inhibitors in clinical development?
- What is the current status of anti-PD-1 drugs, dendritic cell therapies, T-cell therapies and cancer vaccines?
- What are the most valuable R&D projects in cancer immunotherapy and what would be their approximate sales revenues in 2022?
- Number of melanoma drugs approved between 1998 and 2017?
- Number of lung cancer drugs approved between 1998 and 2017?
- Number of brain cancer drugs approved between 1998 and 2017?
- What is CAR T Therapy?
- What are the main challenges associated with CAR T therapy?
- What is the status of CAR T therapeutic approval?
- What are the current regulations for immunotherapies in USA, Europe & Japan?
- What are the main manufacturing steps in CAR T therapy?
- What challenges lie ahead for CAR T production?

Immunotherapy is forecast to become the oncology treatment of choice by 2026 with an estimated 60% of previously treated cancer patients likely to adopt immunotherapy in this timeframe. Multiple treatment lines, combination therapy and the opportunity for repeat treatment are likely to accelerate fast growth. Cancer immunotherapy also expands into multiple indications and our analysis indicates that key immunotherapies

including anti-PD-1 drugs, dendritic cell vaccines, T-cell therapies and cancer vaccines are all driving the market. The rising incidence and prevalence of numerous cancers globally is a significant accelerator of growth. This is due to more sensitive early detection techniques, higher patient awareness and a growing aging population. Furthermore, the FDA's pro-science attitude will accelerate development and regulatory approval for these drugs. To that end, the cancer immunotherapy market is forecast to hit \$100 billion by 2022. Overall strong growth rates are expected due to a significant unmet need and increasing trends of hematological cancers.

Prior to the launching of Yervoy, the five-year survival rate for patients with early stage melanoma was 98%; but the five-year survival rate for late-stage melanoma was just 16%. Yervoy has been reported to have a survival rate of 25% when tested alone. When tested as part of a combination therapy treatment with Bristol's nivolumab, the two-year survival rates rose to 88% for patients with late-stage cancer. Increase in patient survival rates brought about by cancer immunotherapy treatment is similar to that seen when bone marrow transplantation changed our conception on how blood cancer was treated. Other key therapeutic players in this market include Opdivo (nivolumab), Keytruda (pembrolizumab), Tecentriq (atezolizumab), Ibrance (palbociclib) the newly approved Bavencio (avelumab) and Imfinzi (durvalumab) and of course the first CAR-T therapy Kymriah (tisagenlecleucel). The second CAR-T therapy, Yescarta (axicabtagene ciloleucel) from Kite Pharma for adult patients large B-cell lymphoma was also given FDA approval in October 2017.

Opdivo (nivolumab) from BMS is one of the most exciting agents in the immunotherapy space, and is indicated for melanoma, lung cancer, kidney cancer, blood cancer, head and neck cancer, and bladder cancer. It was given a fast-track approval on December 22, 2014. The majority of immune-oncology agents are anti-programmed death-1 (PD-1) monoclonal antibodies, which will certainly guide the market over the coming years. Projects that currently are valuable include combined immunotherapies on our knowledge of CD137 and PD-1/PDL1 mechanisms. A study on a novel effector activating monoclonal antibody known as IMAB362 for the treatment of solid cancers is also exciting. Other projects comparing CAR-T cell effectiveness against T-cells that target CD19 or mesothelin are interesting in a preclinical setting. Of course, Novartis gained the first CAR-T FDA approval for Kymriah (tisagenlecleucel ,CTL019), in August 2017, for children and young adults with B-cell ALL. In October 2017, Yescarta (axicabtagene ciloleucel) from Kite Pharma for adult patients large B-cell lymphoma was also given FDA approval. This is a major boost for the global and US immunotherapy, and gene therapy markets.

Company

Ablynx NV

Activartis Biotech GmbH

Advaxis Inc.

Aduro BioTech Inc.

Agenus Inc.

AlphaVax Inc.

A. Menarini

Amgen Inc.

Antigen Express Inc.

Argos Therapeutics Inc.

Bavarian Nordic A/S

Bellicum Pharmaceuticals Inc.
Biogen Idec Inc.x
Biovest International Inc.
Bristol-Myers Squibb Co.
Cellectis
Cellerant Therapeutics Inc.
Celldex Therapeutics
CEL-SCI Corp.
CureTech Ltd
Delta-Vir GmbH
Dendreon Corp.
DenDrit Biotech USA
DNAtrix Inc.
Eli Lilly and Co.
EMD Serono Inc.
Etubics Corp.
Galena Biopharma Inc.
Genentech Inc.
Genmab AS
GlaxoSmithKline
Gliknik Inc.
GlobelImmune Inc.
Heat Biologics Inc.
Immatics Biotechnologies GmbH
ImmunoCellular Therapeutics Ltd.
Immunocore Ltd
ImmunoFrontier Inc.
ImmunoGen Inc.
Immunomedics Inc.
Immunotope Inc.
Immunovaccine Inc.

Inovio Pharmaceuticals Inc.
Janssen Biotech Inc.
Juno Therapeutics Inc.
Kite Pharma Inc.
MabVax Therapeutics Holdings Inc.
MedImmune LLC
Merck & Co., Inc.
Merrimack Pharmaceuticals Inc.
Morphotek Inc.
NewLink Genetics Corp.
Northwest Biotherapeutics Inc.
NovaRx Corp.
OncoPep Inc.
Oncothyreon Inc.
OSE Pharma SA
Oxford BioTherapeutics Ltd.
Pique Therapeutics
Polynoma LLC
Prima BioMed Ltd.
Progenics Pharmaceuticals Inc.
Regen Biopharma Inc.
Roche Holdings Inc.
Seattle Genetics Inc.
Sorrento Therapeutics Inc.
Spectrum Pharmaceuticals Inc.
Synthon Pharmaceuticals Inc.
TapImmune Inc.
ThioLogics Ltd.
Transgene SA
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10.21 Delta-Vir GmbH

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10.22 Dendreon Corp.

10.22.1 Provenge (Sipuleucel-T)

10.23 DenDrit Biotech USA

10.23.1 MelCancerVac

10.24 DNatrix Inc

10.24.1 DNX-2401

10.25 Eli Lilly and Co.

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10.29.4 Kadcylla (ado-trastuzumab emtansine)

10.29.5 Perjeta (pertuzumab)

<https://www.bioportfolio.co.uk/product/133955-reportstore@bioportfolio.com> to order

10.29.6 Rituxan (rituximab)

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10.33 GlobelImmune Inc

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10.39.3 IMGN289

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Global Cancer Immunotherapy Market Analysis & Forecast to 2022 Antibody Drug Conjugates (ADCs), Bispecific Monoclonal Antibodies, Cancer Vaccines, Cytokines, Interferons, Chimeric Antigen Receptor (CAR) T-Cell Therapy, PD-1/PD-L1 inhibitors, Dendritic Cells, Checkpoint Inhibitors, Adopted Cell Therapy (ACT) & IDO Inhibitors [Report Updated: 11-01-2017]

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