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T-Cells therapy Market Assessment, By Modality [Research, Commercialized], By Therapy Type [CAR T-cell Therapy, T-Cell Receptor based, Tumor Infiltrating Lymphocytes based], By Indication [Hematologic Malignancies, Solid Tumors, Other], By End-user [Hospitals, Cancer Treatment Centers], By Region, Opportunities and Forecast, 2016-2030F

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Abstracts

Global T-Cells therapy market size was valued at USD 3.33 billion in 2022, and is expected to reach USD 12.98 billion in 2030, with a CAGR of 18.54% for the forecast period between 2023 and 2030F. The market for T-cell treatment is constantly evolving and expanding, largely due to ongoing research and development initiatives. To improve efficacy and widen the applications of T-cell therapies, scientists and researchers are constantly investigating new methods, tools, and therapeutic targets. The key factors driving the expansion of the T-cell therapy market size are the rise in cancer prevalence, elderly population, and the usage of various cell therapy technologies to treat cancer symptoms. The prevalence of certain cancers such as leukemia, myeloma, lymphoma, and cancer relapse increase the need for efficient therapeutic interventions and fuels market growth. Also, multiple medications that are currently in the clinical development stage are fueling the market's expansion. For instance, Caribou Biosciences, Inc.'s CB-010 and CB-011 are undergoing phase I clinical studies. Similarly, Cartesian Therapeutics, Inc.'s DESCARTES-17 and DESCARTES-25 are now undergoing preclinical and Phase I trials, respectively. Thus, it is further projected that key companies' attention to developments may possibly fuel the market for T-cell treatment growth.

Increased Strategic Government and Private Investments

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After tecartus, Yescarta, and Kymriah were approved, several organizations changed their business models from developing small chemical and protein-based treatments to adoptive therapy. This element has encouraged strategic investments by both private and public organizations, which has helped the market grow. The market rivalry for T-cell therapy entities is anticipated to expand in the coming years due to increasing product approval and rising production capacities.

For instance, the U.S. FDA approved Yescarta, the first chimeric antigen receptor (CAR) T-cell treatment in February 2022 to manage relapsed or refractory large B-cell lymphoma (LBCL). The NCCN Treatment Guideline's Category 1 recommendation for Yescarta makes it the first CAR T-cell treatment to receive this distinction. The FDA similarly approved ciltacabtagene autoleucel (Carvykti) in February 2022 for patients with multiple myeloma that is refractory, which did not respond to treatment, or has reappeared after treatment (relapsed).

The California Institute for Regenerative Medicine (CIRM) committed $4 million in January 2023 to develop and test a CAR T-cell therapy for treating diverse B-cell malignancies, including lymphomas and leukemias.

Following the closure of the transaction in May 2023 , Laurus Labs’ share in ImmunoACT will rise to 33.86% on a fully diluted basis. In November 2021, the corporation had already purchased 26.62% of ImmunoACT. The CAR T-cell therapy assets in ImmunoACT's portfolio are in various stages of development and are used to treat various cancers and autoimmune illnesses. With this funding, Laurus Labs is more committed to offering patients revolutionary Cell and Gene Therapy technology at an affordable price. This funding will aid ImmunoACT in preparing to produce more medications.

Advancement in CAR T-Cell Therapy

In CAR T-cell therapy, T-cells taken from patients are artificially bioengineered to express CARS, which can recognize and attach to the cancer cells. Companies in the CAR T-cell segment are engaging in strategic developments with other companies, such as partnerships, expansions, agreements, collaborations, and the introduction of new products, which is promoting the growth of the T-cell treatment market.

For instance, the FDA authorized CARVYKTI produced by Janssen Biotech, Inc. in 2022. Chimeric antigen receptor T-cell, or CAR-T, is the abbreviation for the therapy

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known as CARVYKTI. Adult patients with multiple myeloma, a bone marrow malignancy, can receive treatment with CARVYKTI (ciltacabtagene autoleucel). After four or more prior lines of therapy, CARVYKTI treats adult patients with multiple myeloma that have relapsed or become resistant to treatment. It comprises a proteasome inhibitor, an immunomodulatory drug, and an anti-CD38 monoclonal antibody.

Astellas committed USD 50 million to Poseida's CAR T-cell therapy in August 2023. Astellas will have exclusive negotiating rights and first choice for licensing P-MUC1C-ALLO1 in solid tumors as part of the agreement.

Government Regulations

The development, testing, and marketing of cell therapies and other biologics used in T-cell therapy treatments, such as adoptive cell transfer (ACT), are governed by the U.S. Food and Drug Administration (FDA).

Cell therapy evaluation standards and guidelines have been published by the European Medicines Agency (EMA) for use in clinical and human trials.

The safety, effectiveness, and quality of biological products used in T-cell therapy treatments are overseen by the FDA's Center for Biologic Evaluation and Research (CBER).

Best practices have been established by the National Institutes of Health (NIH) for carrying out clinical trials utilizing cell therapies, particularly for T-cell therapy. Guidelines for patient selection criteria, risk assessment techniques, and monitoring procedures are included.

To guarantee that cell therapies are produced safely and ethically, the International Society for Cellular Therapy (ISCT) offers rules and criteria.

Latest Advancements in Therapeutic Approaches

The global T-cell therapy market has witnessed significant advancements in recent years. Innovative technologies like CAR-T therapy have revolutionized cancer treatment, researchers are exploring next-generation T-cell therapies, such as TCR (T-cell Receptor) therapies, which broadens the scope of treatable diseases. Furthermore,

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the development of allogeneic T-cell therapies, derived from healthy donors, is making treatments more accessible. These breakthroughs signify a promising future for personalized and off-the-shelf T-cell therapies, expanding the horizon of therapeutic options in the global market.

The U.S. Food and Drug Administration (FDA) granted the Regenerative Medicine Advanced Therapy (RMAT) designation to Autolus Therapeutics plc, a clinical-stage biopharmaceutical firm, to its lead gene therapy obecabatagene autoleucel (obe-cel) in April 2022. In the ongoing FELIX Phase 2 study in adult relapsed/refractory B-Acute Lymphocytic Leukemia, a CD19-directed autologous chimeric antigen receptor (CAR) T treatment is being examined.

In 2022, Novartis International AG introduced a novel T-Cell Therapy known as Kymriah, specifically designed for addressing relapsed or refractory follicular lymphoma. This innovative therapy, classified as a CD19-targeted CAR-T-cell therapy, received FDA approval.

Impact of COVID-19

The COVID-19 outbreak hampered operations in the global health care industry, especially the T-cell treatment market. The pandemic hurt the global T-cell treatment market since most nations implemented lockdown policies. Due to supply chain interruptions, certain businesses encountered delays in producing and delivering T-cell therapies. The pandemic caused significant disruptions to several clinical trials of T-cell treatments, with some trials being postponed or discontinued entirely.

However, it was noted that post-pandemic, the prevalence of cancer cases has brought attention to the need for innovation in the healthcare industry, and many businesses are boosting their efforts in R&D. It has encouraged funding for research aimed at figuring out how T-cell treatments might be applied to treat viral infections. For instance, Tevogen Bio announced, in November 2022, it intended to examine the potential therapeutic uses of TVGN-489, an investigational COVID-19 T-cell therapy, in Long COVID. The highly purified cytotoxic CD8+ T lymphocytes (CTLs) TVGN-489 are designed to locate and eradicate SARS-CoV-2 infected cells.

Key Players Landscape and Outlook

The increasing number of businesses engaging in CAR-T therapy development is projected to boost market competition. Novartis AG and Kite Pharma currently dominate

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the T-cell therapy market through innovative and novel product introductions. In addition, numerous prominent corporations are launching significant initiatives to strengthen their market presence. For instance, in June 2022, Immunocore Ltd., a commercial-stage biotechnology startup, engaged into a clinical trial collaboration and supply deal with Sanofi. Sanofi can use KIMMTRAK to analyze their precisely PEGylated, tailored form of IL-2, SAR444245 in this collaboration. The agreement will help the company's expansion by improving cell therapy manufacturing operations.

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