

# CAR T-cell Therapy - Pipeline Insight, 2022

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## Abstracts

This report can be delivered to the clients within 2-3 Business Days

DelveInsight's, "CAR T-cell Therapy - Pipeline Insight, 2022" report provides comprehensive insights about 300+ companies and 300+ pipeline drugs in CAR T-cell Therapy pipeline landscape. It covers the pipeline drug profiles, including clinical and nonclinical stage products. It also covers the therapeutics assessment by product type, stage, route of administration, and molecule type. It further highlights the inactive pipeline products in this space.

### Geography Covered

Global coverage

### CAR T-cell Therapy Understanding

#### CAR T-cell Therapy: Overview

CAR T-cells are the fusion proteins of a selected single-chain fragment variable from a specific monoclonal antibody and one or more T-cell receptor intracellular signalling domains. A CAR combines antigen-binding domains-most commonly, a single-chain variable fragment (scFv) derived from the variable domains of antibodies with the signalling domains of the TCR chain and additional costimulatory domains from receptors, such as CD28, OX40, and CD137. CAR T-cell therapy involves genetic modification of patient's autologous T-cells to express a CAR, specific for a tumor antigen, followed by ex vivo cell expansion and re-infusion back to the patient. The effectiveness of CAR T-cell Therapy is based on antigen specificity of T-cells. This specificity can be enhanced by the genetic modification and redirection of T-cells to

target antigens that are overexpressed in tumors. Patient's T-cells can be engineered to express modified Chimeric Antigen Receptors (CARs) that will enhance antigen specificity.

'CAR T-cell Therapy - Pipeline Insight, 2022' report by DelveInsight outlays comprehensive insights of present scenario and growth prospects across the indication. A detailed picture of the CAR T-cell Therapy pipeline landscape is provided which includes the disease overview and CAR T-cell Therapy treatment guidelines. The assessment part of the report embraces, in depth CAR T-cell Therapy commercial assessment and clinical assessment of the pipeline products under development. In the report, detailed description of the drug is given which includes mechanism of action of the drug, clinical studies, NDA approvals (if any), and product development activities comprising the technology, CAR T-cell Therapy collaborations, licensing, mergers and acquisition, funding, designations and other product related details.

## Report Highlights

The companies and academics are working to assess challenges and seek opportunities that could influence CAR T-cell Therapy R&D. The therapies under development are focused on novel approaches to treat/improve CAR T-cell Therapy.

## CAR T-cell Therapy Emerging Drugs Chapters

This segment of the CAR T-cell Therapy report encloses its detailed analysis of various drugs in different stages of clinical development, including phase II, I, preclinical and Discovery. It also helps to understand clinical trial details, expressive pharmacological action, agreements and collaborations, and the latest news and press releases.

## CAR T-cell Therapy Emerging Drugs

### JWCAR029: JW Therapeutics

JWCAR029 is a CAR-T cell product targeting CD19, which is intended to treat late-stage lymphoma and leukemia (Second-line therapy or greater). The molecule is in phase-II stage of development. Initially, JWCAR029 is being studied for the treatment of B-cell malignancies focusing on relapsed and refractory DCBCL. In June 2020, the

National Medical Products Administration (“NMPA”) accepted for review its NDA relating to relma-cel as a third-line treatment for DLBCL. The drug is currently in preregistration stage for the treatment of Diffuse large B cell lymphoma.

#### Descartes-11: Cartesian Therapeutics

Descartes-011 are autologous CD8+ T-cells expressing an anti-BCMA chimeric antigen receptor. Descartes-11 is currently in phase II clinical trials to treat patients with multiple myeloma in an outpatient setting.

#### CNCT19: CASI Pharmaceuticals

CNCT19 is being developed by CASI Pharmaceuticals in collaboration with Juventas Cell Therapy. CNCT19 is currently in Phase II for Non-Hodgkin's Lymphoma, Relapsed or Refractory Acute Lymphoblastic Leukemia and Phase I/II for Large B-cell Lymphoma.

#### CTL119: Novartis

CTL119 (CD19 CAR) is a humanized CD19 CAR under development by Novartis in collaboration with the University of Pennsylvania and currently is in Phase II stage for the treatment of Acute Lymphoid Leukemia. CTL119 is produced with a patient's T-cells, some of which are removed and then reprogrammed in Penn's Clinical Cell and Vaccine Production Facility with a gene transfer technique designed to demonstrate the T cells to target and kill tumor cells. The engineered cells contain an antibody-like protein known as a CAR, which is designed to bind to CD19 protein on the surface of cancerous B cells. The modified “hunter” cells are then infused back into the patient's body, where they multiply and are believed to attack the cancer cells.

#### P-BCMA-101: Poseida Therapeutics

P-BCMA-101 is the company's leading investigational CAR-T immunotherapy designed to supercharge a patient's T-cells to safely and effectively eliminate tumor cells carrying B cell maturation antigen (BCMA), which is expressed on essentially all multiple myeloma cells. It modifies a patient's T-cells using piggyback Transposon System, which enables several desirable features. It is a next-generation CAR T-cell therapy

designed to maintain very potent and durable activity against BCMA, an antigen target expressed on essentially every multiple myeloma cell. P-BCMA-101 encodes a CARTyrin that targets the B-cell maturation antigen (BCMA) for the treatment of multiple myeloma (MM) and has several unique aspects that improve upon earlier CAR T products. It is currently in phase 2 of development stage for the treatment of multiple myeloma.

#### AUTO4: Autolus Limited

AUTO4 is a programmed T-cell therapy product candidate being developed by Autolus Limited to leverage a new targeting approach based on the mutually exclusive expression of two subtypes of the T-cell receptor beta chain: AUTO4 targets TRBC1, while another of the company's product candidates in development, AUTO5, targets TRBC2. Normal T-cells contain both TRBC1 and TRBC2 compartments, whereas T-cell lymphoma cells are derived from mature cells and express only TRBC1 or TRBC2. The therapeutic candidate is in phase I/II of development for the treatment of patients with relapsed or refractory TRBC1-positive selected PTCL.

#### Descartes-08: Cartesian Therapeutics

Descartes-08 is a CD8+ CAR-T investigational therapy that targets cells expressing B-cell Maturation Antigen (BCMA), a protein expressed by all plasma cells. Descartes-08 is engineered to have a defined and predictable half-life, enabling repeat dosing to maximize potency while minimizing risk of toxicity. Descartes-08's enhanced safety features enable use for of a wide range of diseases, from multiple myeloma and other cancers to autoimmune diseases. Descartes-08 is currently in Phase I/II clinical trials to treat patients with multiple myeloma in an outpatient setting.

#### ET140202: Eureka Therapeutics

Eureka Therapeutics is developing ET140202 (also known as ET1402; ET1402L1), an investigational CAR T-cell therapy for treating hepatocellular carcinoma (HCC) which is the most common type of liver cancer. The therapeutic candidate is a humanized antibody, identified from Eureka's proprietary ALPHA phage library, which selectively targets liver cancer cells overexpressing alpha-fetoprotein (AFP). ET1402 is selective and specific for the AFP158-166 peptide complexed with human leukocyte antigen

(HLA)-A\*02:01. The company, in collaboration with the City of Hope, is evaluating ET1402 in the phase I/II stage of development for the treatment of Liver Cancer.

#### MB-102: Mustang Bio

Mustang Bio (a subsidiary of Fortress Biotech) is developing MB-102 which is a CAR T-cell therapy that contains a CD123 antigen targeted antibody scFv with a co-stimulatory domain CD28 and an essential activating domain CD3 $\zeta$  as well as the extracellular domain of EGFR (EGFRt) as a selection/safety marker. It is in Phase I/II clinical trials for the treatment of acute myeloid leukemia (AML).

#### AU101: Aurora Biopharma

AU101 is under development by Aurora Biopharma. It is a chimeric CAR T-cell therapy that contains a HER2 targeted antibody scFv with a costimulatory domain CD28 and an essential activating domain CD3 $\zeta$ , transfected to autologous CMV-pp65 T-cells using a retroviral virus. The therapeutic candidate is in phase I/IIa stage of development for the treatment of Recurrent Glioblastoma; Sarcoma/Osteosarcoma. The therapeutic CAR T-cell agent targets HER2 expression. Preclinical animal studies with different cancers showed that AU101 killed tumors in various cancers in around two weeks. Aurora has a clinical trial collaboration to conduct CAR T trials with Baylor College of Medicine, Texas Children's Hospital and Baptist Methodist Hospital in Houston, Texas.

Further product details are provided in the report.....

#### CAR T-cell Therapy: Therapeutic Assessment

This segment of the report provides insights about the different CAR T-cell Therapy drugs segregated based on following parameters that define the scope of the report, such as:

#### Major Players in CAR T-cell Therapy

There are approx. 300+ key companies which are developing the therapies for CAR T-cell Therapy. The companies which have their CAR T-cell Therapy drug candidates in the most advanced stage, i.e. preregistration include, JW Therapeutics.

## Phases

DelveInsight's report covers around 300+ products under different phases of clinical development like

Late stage products (Phase III)

Mid-stage products (Phase II)

Early-stage product (Phase I) along with the details of

Pre-clinical and Discovery stage candidates

Discontinued & Inactive candidates

Route of Administration

CAR T-cell Therapy pipeline report provides the therapeutic assessment of the pipeline drugs by the Route of Administration. Products have been categorized under various ROAs such as

Oral

Parenteral

intravitreal

Subretinal

Topical.

Molecule Type

Products have been categorized under various Molecule types such as

CAR-T cell therapies

Immunotherapies

Gene therapy

Product Type

Drugs have been categorized under various product types like Mono, Combination and Mono/Combination.

### CAR T-cell Therapy: Pipeline Development Activities

The report provides insights into different therapeutic candidates in phase II, I, preclinical and discovery stage. It also analyses CAR T-cell Therapy therapeutic drugs key players involved in developing key drugs.

### Pipeline Development Activities

The report covers the detailed information of collaborations, acquisition and merger, licensing along with a thorough therapeutic assessment of emerging CAR T-cell Therapy drugs.

### CAR T-cell Therapy Report Insights

CAR T-cell Therapy Pipeline Analysis

Therapeutic Assessment

Unmet Needs

Impact of Drugs

### CAR T-cell Therapy Report Assessment

Pipeline Product Profiles

Therapeutic Assessment

Pipeline Assessment

Inactive drugs assessment

Unmet Needs

## Key Questions

Current Treatment Scenario and Emerging Therapies:

How many companies are developing CAR T-cell Therapy drugs?

How many CAR T-cell Therapy drugs are developed by each company?

How many emerging drugs are in mid-stage, and late-stage of development for the treatment of CAR T-cell Therapy?

What are the key collaborations (Industry–Industry, Industry–Academia), Mergers and acquisitions, licensing activities related to the CAR T-cell Therapy therapeutics?

What are the recent trends, drug types and novel technologies developed to overcome the limitation of existing therapies?

What are the clinical studies going on for CAR T-cell Therapy and their status?

What are the key designations that have been granted to the emerging drugs?

## Key Players

Sorrento Therapeutics

Cartesian Therapeutics

CASI Pharmaceuticals



Novartis

Poseida Therapeutics

Shanghai Unicar-Therapy Bio-medicine Technology

Sinobioway Cell Therapy Co., Ltd.

Gilead Sciences

Tessa Therapeutics

Wuhan Bio-Raid Biotechnology

Autolus Limited

Beijing Immunochina Medical Science and Technology

BioAtla

BioInvent International

Carsgen Therapeutics

Chongqing Precision Biotech

Eureka Therapeutics

Formula Pharmaceuticals

Guangzhou Bio-gene Technology

Hebei Senlang Biotechnology

Mustang Bio

MolMed

Aurora BioPharma

Atara Biotherapeutics

Bellicum Pharmaceuticals

Kecellitics Biotech Company Ltd

Yake Biotechnology

Minerva Biotechnologies

Shanghai GeneChem Co., Ltd.

Allogene Therapeutics

Miltenyi Biotec

PersonGen BioTherapeutics (Suzhou)

Precision BioSciences

Takara Bio

BioNTech

Miltenyi Biomedicine

CRISPR Therapeutics

Celgene

Cellectis

Celyad

Gracell Bio

Servier

Protheragen

Noile-Immune Biotech

Arcellx Inc

HRAIN Biotechnology

Tmunity Therapeutics Inc.

AffylImmune Therapeutics

Maxcyte

Kuur Therapeutics

TILT Biotherapeutics

Targzyme

TC BioPharm

Takeda

Sensei Biotherapeutics

Sana Biotechnology

Oncternal Therapeutics

Humorigin

Fate Therapeutics

Enlivex Therapeutics Ltd

Exuma

Caribou Biosciences

Arbele Limited

Adicet Bio

## Key Products

CEA CAR-T

Descartes-11

CNCT19

CTL119

P-BCMA-101

EPCAM-targeted CAR-T cells

KTE-X19

TT11

AUTO4

AUTO3

IM19 CAR-T

CAB-AXL-ADC

CAB-ROR2-ADC

CSG-CD19

CT053

Descartes-08

PCAR-19B

BCMA CAR-T cells

ET140202

CIK-CAR.CD19

BG-T19

Autologous CD19-targeting CAR T cells (Senl-001)

MB-102

Autologous CAR-T CD44v6 cell therapy

AU101

ATA2271

AUTO1

BPX-601

CD123 CAR T cell therapy

Anti-CD22 CAR

huMNC2-CAR44 CAR T-cells

ALLO-501A

AUTO1/22

ET 1402L1-CART

BPX-603

MB CART 20.1

MB-106

PCAR-019

Anti-MUC1 CAR-T cells

PBCAR0191

PBCAR269A

TBI-1501

BNT211

MB-CART19.1

iCarTAB BioMed

CTX101

Bluebird Bio

bb21217

JCAR 018

UCART123

CYAD-02

GC027

NIB-102

TMUN ONC 001

AIC100

MCY-M11

KUR-501

TILT-T392

TZ-102

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Comparative Analysis

Descartes-11: Cartesian Therapeutics

Product Description

Research and Development

Product Development Activities



Drug profiles in the detailed report.....

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ET140202: Eureka Therapeutics

Product Description

Research and Development

Product Development Activities

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Preclinical and Discovery Stage Products

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TT14: Tessa Therapeutics

Product Description

Research and Development

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