

# NK Cell therapies - Pipeline Insight, 2022

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## Abstracts

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DelveInsight's, "NK Cell therapy - Pipeline Insight, 2022" report provides comprehensive insights about 80+ companies and 100+ pipeline drugs in NK 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

### NK Cell therapy Understanding

#### NK Cell therapy: Overview

Natural killer cells, also known as NK cells are a type of lymphocytes and are key components of the innate immune system. They are highly specific predators that play a major role in the host rejection of both tumors and viral infected cells. NK cells have cytotoxic small granules, which contain special proteins such as perforins and proteases, are known as granzymes in their cytoplasm. NK cells surveillance system includes a number of cell surface activating and inhibitory receptors that control the cytolytic activity of NK cells by sending an either stimulatory or inhibitory signal. The fine balance between activation and inhibition NK cells decides their final action. The inhibitory receptor's ligands include self-MHC class I molecules that are present on all nucleated cells of the body which helps in avoiding the NK cells activity on normal cells.

NK cells have also potent producers of inflammatory cytokines, such as TNF- $\alpha$  and IFN- $\gamma$ . The activation of NK cells is controlled by a dynamic balance between the positive and negative signals. The encounter between the NK cell and target cell results in adhesion and conjugation (Immune Synapse). The NK cells activating receptors induces the phosphorylation of ITAM or kinase and tight actin cytoskeleton rearrangements that, in turn, lead to a more stable conjugation (Activation). Activation of NK cells also takes place by the locally secreted cytokines by other immune cells, inducing various types of immune-related gene expression including cytokines, NK cell effectors, and non-coding microRNAs (miRNAs). NK cell-based cancer immunotherapy aims at reversing the tumor-induced NK cell dysfunction that is observed in patients with cancer and to increase and sustain NK cell effector functions. Therapies involving NK cells may either activate endogenous NK cells or involve the transfer of exogenous cells by hematopoietic stem cell transplantation (HSCT) or adoptive cell therapy.

'NK 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 NK Cell therapy pipeline landscape is provided which includes the disease overview and NK Cell therapy treatment guidelines. The assessment part of the report embraces, in depth NK 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, NK 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 NK Cell therapy R&D. The therapies under development are focused on novel approaches to treat/improve NK Cell therapy.

## NK Cell therapy Emerging Drugs Chapters

This segment of the NK 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.

## NK Cell therapy Emerging Drugs

### Monalizumab: Innate Pharma

Monalizumab (also known as IPH2201) is a first-in-class humanized IgG4 targeting NKG2A receptors expressed on tumor-infiltrating cytotoxic NK and CD8 T lymphocytes. It is under development by Innate Pharma in Phase III stage for the treatment of Squamous Cell Carcinoma of the Head and Neck and in Phase II stage of development for the treatment of gynecological cancers, chronic lymphocytic leukemia, and head and neck cancer. It is in the Phase I stage of development for the treatment of advanced solid tumors and hematological malignancies.

### NKTR-214 (Bempegaldesleukin): Nektar Therapeutics

Nektar Therapeutics is developing NKTR-214 which is an intravenously administered, investigational, engineered IL-2 cytokine for the treatment of solid tumors. NKTR-214 is designed to grow specific cancer-killing T-cells and natural killer cell populations in the body that fight cancer is known as endogenous tumor-infiltrating lymphocytes (TILs). NKTR-214 stimulates these cancer-killing immune cells in the body by targeting CD122 specific receptors found on the surface of these immune cells, known as CD8+ effector T cells and Natural Killer (NK) cells. CD122, which is also known as the Interleukin-2 receptor beta subunit, is a key signaling receptor that is known to increase the proliferation of these effector T cells.

### ALECSAT: CytoVac

ALECSAT (Autologous Lymphoid Effector Cells Specific against Tumor-cells) is a therapy that supplements and strengthens the patient's immune system so it can fight the cancer cells in the same way as the body originally should have reacted. Natural Killer Cells used, in the ALECSAT therapy attack, the cancer cells in several ways, as they can recognize more than one property of the cancer cells. ALECAST is being evaluated for breast cancer and newly diagnosed glioblastoma in Phase II.

### CellProtect: XNK Therapeutics

CellProtect is a novel cell therapy based on autologous NK cells that are expanded and their cytotoxic activity restored through a patented process. The cells are then infused into the patient to treat the disease. Cell Protect is under development by CellProtect Nordic Pharmaceuticals and is currently in Phase II stage for the treatment of Multiple Myeloma at the Karolinska University Hospital in Huddinge, Sweden and Sanofi's support by providing Sarclisa. It is manufactured under GMP conditions at the core facility Vecura at Karolinska University Hospital.

#### NK-92: ImmunityBio

NK-92 also known as aNK is activated natural killer (NK) cells and administered intravenously. It is the only cell line that can be commercialized as a direct, scalable and off-the-shelf product, which attacks and kills abnormal cells on contact. NK-92 does not require an intact immune system for killing the diseased cells in the body. It targets NK ligand and activates its action. NK-92 cells are also being engineered to target specific cancers and also to express a receptor that will couple with monoclonal antibodies to enhance their cancer-killing effects. NK-92 is being evaluated in Phase II stage of development for the treatment of stage IIIB & IV Merkel cell carcinoma as monotherapy and in combination with ALT-803, in Phase I stage of development for acute myeloid leukemia, Hematological Malignancies and solid tumors and in the Pre-IND phase for hepatocellular carcinoma and infectious disease.

#### haNK: ImmunityBio

haNK (also known as high-affinity Natural killer cells) is a genetically engineered and modified aNK cells that incorporates high-affinity CD16 receptors (V158 Fc $\gamma$ RIIIa) and bind to antibodies. The therapeutic candidate targets CD16 and results in the killing of cancerous cells by process of Antibody-Dependent Cell-Mediated Cytotoxicity (ADCC). haNK is further engineered to express IL-2. These cells enhanced Perforin and granzyme-mediated killing of tumor cells, as well as support the expansion of NK cell populations. haNK is under development by NantKwest and is in the Phase II stage of development for the treatment of cancer. The company is developing the drug by using Antibody-mediated Killing: haNK Platform.

#### K-NK002: Kiadis Pharma

K-NK002 is a natural killer cell-based immuno-oncology therapy. The molecule is made up of company's proprietary off-the-shelf NK-cell platform. K-NK002 is an NK cell product derived from peripheral blood leukocytes collected from a related donor (HLA-haploidentical matched) and enriched for NK cells with depletion of CD3+ T-lymphocytes (T-cells) followed by enriched ex-vivo expansion. K-NK002 is under Phase II clinical development by Kiadis Pharma for the treatment of acute myeloid leukemia and Myelodysplastic syndromes. CytoSen's lead NK-cell therapy candidate, CSDT002-NK is now known as K-NK002 after the company being acquired by Kiadis Pharma in 2019.

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

### NK Cell therapy: Therapeutic Assessment

This segment of the report provides insights about the different NK Cell therapy drugs segregated based on following parameters that define the scope of the report, such as:

#### Major Players in NK Cell therapy

There are approx. 80+ key companies which are developing the therapies for NK Cell therapy. The companies which have their NK Cell therapy drug candidates in the most advanced stage, i.e. Phase III include, Innate Pharma.

#### Phases

DelveInsight's report covers around 100+ 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

NK 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

Intravenous

Subcutaneous

Topical

Molecule Type

Products have been categorized under various Molecule types such as

Monoclonal Antibody

Peptides

Polymer

Small molecule

Gene therapy

Product Type

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

## NK Cell therapy: Pipeline Development Activities

The report provides insights into different therapeutic candidates in phase II, I, preclinical and discovery stage. It also analyses NK 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 NK Cell therapy drugs.

### NK Cell therapy Report Insights

- NK Cell therapy Pipeline Analysis

- Therapeutic Assessment

- Unmet Needs

- Impact of Drugs

### NK Cell therapy Report Assessment

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- Therapeutic Assessment

- Pipeline Assessment

- Inactive drugs assessment

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### Key Questions

### Current Treatment Scenario and Emerging Therapies:

How many companies are developing NK Cell therapy drugs?

How many NK 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 NK Cell therapy?

What are the key collaborations (Industry–Industry, Industry–Academia), Mergers and acquisitions, licensing activities related to the NK 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 NK Cell therapy and their status?

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## I would like to order

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