Nkarta Announces Updated Clinical Data on Anti-CD19 Allogeneic CAR-NK Cell Therapy NKX019 for Patients with Relapsed or Refractory Non-Hodgkin Lymphoma

December 5, 2022

- *7 of 10 patients treated with NKX019 monotherapy at 1 billion and 1.5 billion CAR NK cells per dose achieved complete response (70% CR rate)*
- *5 CRs achieved across all dose levels after a single cycle (3 weekly doses) of NKX019 monotherapy; 3 partial responses deepened to CR with additional cycles*
- *Patients with CR observed across multiple NHL histologies, including LBCL*
- *Consolidation dosing administered to 7 patients with CRs with aim to eradicate residual tumor cells and prolong response*
- *Durable responses of greater than 6 months achieved in multiple patients*
- *Early safety profile supports outpatient administration and shows no neurotoxicity / ICANS, graft versus host disease (GvHD), or >Gr3 cytokine release syndrome (CRS)*
- *Recently opened dose expansion cohorts include NXK019 monotherapy in patients with LBCL that are CAR T naive or CAR T experienced, and NKX019 combination therapy with rituximab*
- *Conference call scheduled for today, December 5 at 8:00 a.m. ET*

SOUTH SAN FRANCISCO, Calif., Dec. 05, 2022 (GLOBE NEWSWIRE) -- Nkarta, Inc. (Nasdaq: NKTX), a biopharmaceutical company developing engineered natural killer cell therapies to treat cancer, today announced positive updated data from its Phase 1 dose escalation study of NKX019 as monotherapy to treat patients with relapsed or refractory (r/r) non-Hodgkin lymphoma (NHL).

Seven of ten patients treated at the higher dose levels in a three-dose regimen showed a complete response (70% CR), including two patients with aggressive large B cell lymphoma (LBCL), one patient with mantle cell lymphoma (MCL), and one patient with marginal zone lymphoma (MZL). No dose limiting toxicity, neurotoxicity / ICANS, graft versus host disease (GvHD), or >Gr3 cytokine release syndrome (CRS) were observed in the study.

“NKX019 continues to demonstrate impressive single-agent activity, preliminary durability and an encouraging safety profile as an off-the-shelf, on-demand cell therapy for heavily pre-treated patients with NHL,” said Paul J. Hastings, President and CEO of Nkarta. “Based on this initial success, we recently opened dose expansion cohorts to explore combination and single-agent regimens in patients with LBCL, an especially aggressive form of lymphoma, and to address the large unmet need in patients who have received prior autologous CAR T therapy. We remain committed to improved access for patients through the integration of cell therapy into the broader outpatient setting.”

Nkarta plans to provide updates from the NKX019 program, including data from the dose expansion cohorts, in 2023.

Evaluating NKX019 in r/r B cell malignancies
NKX019 is an allogeneic, cryopreserved, off-the-shelf cancer immunotherapy candidate that uses NK cells engineered to target the B-cell antigen CD19, a clinically validated target for B-cell cancer therapies. The NKX019 Phase 1 study is evaluating the safety and anti-tumor activity of NKX019 as a multi-dose, multi-cycle therapy in patients with r/r B cell malignancies.

As of November 28, 2022, 19 patients were enrolled and dosed. Fourteen patients entered the study with a diagnosis of non-Hodgkin lymphoma (NHL), 7 of which were aggressive large B cell lymphoma (LBCL). Patients had received a median of 4 prior lines of therapy (range of 2 to 10). To date, enrollment has included patients with aggressive disease characteristics and extensive lesions throughout the body. Patients were enrolled at clinical trial sites in Australia (13) and the United States (6).

“Autologous CAR T cell therapy has undeniably changed the NHL treatment landscape, but the possibility of severe toxicity and the limited access of these therapies leave many potentially eligible patients without a cellular therapy option,” said Michael Dickinson, M.D., Lead, Aggressive Lymphoma disease group, Clinical Haematology, Peter MacCallum Cancer Centre and Royal Melbourne Hospital, and investigator in the NKX019 trial. “In the data so far, NKX019 has shown encouraging anti-tumor activity, including in patients with aggressive histologies, who are the patients who are most in need.”

Safety in NKX019
NKX019 was well tolerated. No ICANS, GvHD, or >Gr3 CRS were observed in the study. No dose-limiting toxicities were observed. Five patients developed fever within 8 hours of NKX019 infusion, and each resolved within 24 hours. 2 of the 5 patients were assessed to have infusion-related reactions, 2 patients were assessed to have CRS, despite the rapid onset and rapid resolution not common in CRS, and one patient had both entities described in two separate cycles. The most common higher-grade adverse events were myelosuppression - a condition resulting in fewer red blood cells, white blood cells and platelets, which is common in this patient population post lymphodepletion. (See table 1.) The emerging safety profile of NKX019 is positively differentiated from those of many cell therapies.

NXK019 Safety (Table 1)

Grade 3/4 AEs in > 1 subject	**Total (N=19)**
Subjects with any ≥ Grade 3 AEs	16 (84%)
Neutrophil count decreased	12 (63%)

Platelet count decreased	8 (42%)
Febrile neutropenia	5 (26%)
Anemia	4 (21%)
WBC count decreased	3 (16%)
Lymphocyte count decreased	2 (11%)

Treatment emergent adverse events regardless of relationship based on interim data from open clinical database as of 28 November 2022

Clinical Activity in NXK019

Nineteen patients who received NKX019 were assessed (See table 2). In the two highest dose cohorts (1 B cells x 3 and 1.5 B cells x 3), 8 out of 10 patients with NHL achieved an objective response (80% ORR) and 7 out of 10 achieved a complete response (70% CR). 5 of 6 patients with NHL in the cohort receiving 3 doses of 1 billion cells achieved a response (83% ORR), and 4 of 6 achieved a complete response (67% CR rate). 3 of 4 patients with NHL in the cohort receiving 3 doses of 1.5 billion cells achieved a response (75% ORR) and a complete response (75% CR). For all cohorts in the dose finding portion (300 M cells x 3, 1 B cells x 3, and 1.5 B cells x 3), 10 of 14 patients with NHL achieved an objective response (71% ORR) and 8 of 14 achieved a complete response (57% CR). 3 patients with ALL and 2 patients with CLL were treated, with no response observed.

NKX019 Clinical Activity (Table 2)

	300 M cells x 3		**1 B cells x 3**		**1.5 B cells x 3**	
	ORR (CR, PR)	**CR**	**ORR** (CR, PR)	**CR**	**ORR** (CR, PR)	**CR**
All NHL	**2/4 (50%)**	**1/4 (25%)**	**5/6 (83%)**	**4/6 (67%)**	**3/4 (75%)**	**3/4 (75%)**
LBCL[#]	1/3	0/3	1/2	1/2	1/2	1/2
MCL	-	-	1/1	1/1	-	-
FL	1/1	1/1	2/2	1/2	2/2	2/2
MZL	-	-	1/1	1/1	-	-
Leukemia						
ALL	0/1 (0%)	0/1 (0%)	0/2 (0%)	0/2 (0%)	-	-
CLL	-	-	-	-	0/2 [1/2 SD]	0/2

[#]LBCL includes DLBCL and FL3b

ALL: acute lymphoblastic leukemia; CLL: chronic lymphocytic leukemia; CR: complete response; FL: follicular lymphoma; LBCL: large B-cell lymphoma; MCL: mantle cell lymphoma; MZL: marginal zone lymphoma; NHL: non-Hodgkin lymphoma; ORR: overall response rate; PR: partial response

About the NKX019 Clinical Trial

NKX019 is an allogeneic, cryopreserved, off-the-shelf cancer immunotherapy candidate that uses natural killer (NK) cells engineered to target the B-cell antigen CD19, a clinically validated target for B-cell cancer therapies. The dose-finding portion of the NKX019 Phase 1 study evaluates the safety and anti-tumor activity of NKX019 as a multi-dose, multi-cycle monotherapy following lymphodepletion in patients with r/r B-cell malignancies. Patients must have received at least two prior therapies. Patients that received prior autologous CAR-T therapy were not eligible.

Patients in the NKX019 trial received a cycle of treatment consisting of lymphodepletion with 3 days of fludarabine and cyclophosphamide followed by NKX019 cells in a three-dose regimen where cells were given on Days 0, 7, and 14. Patients received doses of 300 million, 1 billion, or 1.5 billion cells three times in a cycle. Based on tumor response and tolerability assessment, patients are eligible to receive additional treatment cycles, including patients with progressive disease to observe whether NKX019 can reverse progression. Disease assessment was performed by investigator review according to the 2014 Lugano response criteria for patients with NHL and NCCN response criteria for patients with ALL.

The dose-expansion portion of the Phase 1 clinical trial of NKX019 will investigate NKX019 as combination therapy with rituximab, an anti-CD20 monoclonal antibody, in patients with r/r non-Hodgkin lymphoma, as well as NKX019 as monotherapy in patients with large B-cell lymphoma (LBCL) who previously received autologous CD19 CAR T-cell therapy. The dose expansion will also further investigate NKX019 as monotherapy in patients with LBCL who have not previously received autologous CD19 CAR T-cell therapy.

Conference Call Information

Nkarta management will discuss the NKX019 results on Monday, December 5, 2022, at 8:00 a.m. ET. To access the live webcast, please register online on the Investors section of Nkarta's website: https://ir.nkartatx.com/events-and-presentations. An archived webcast and accompanying slides will be available on the Company's website approximately two hours after the event.

About NKX019

NKX019 is an allogeneic, cryopreserved, off-the-shelf cancer immunotherapy candidate that uses natural killer (NK) cells derived from the peripheral blood of healthy adult donors. It is engineered with a humanized CD19-directed CAR for enhanced tumor cell targeting and a proprietary, membrane-bound form of interleukin-15 (IL-15) for greater persistence and activity without exogenous cytokine support. CD19 is a biomarker for normal and malignant B cells, and it is a validated target for B cell cancer therapies. To learn more about the NKX019 clinical trial in adults with advanced B cell malignancies, please visit ClinicalTrials.gov.

About Nkarta

Nkarta is a clinical-stage biotechnology company advancing the development of allogeneic, off-the-shelf natural killer (NK) cell therapies for cancer patients. By combining its cell expansion and cryopreservation platform with proprietary cell engineering technologies and CRISPR-based genome engineering capabilities, Nkarta is building a pipeline of future cell therapies engineered for deep anti-tumor activity and intended for broad access in the outpatient treatment setting. For more information, please visit the company's website at www.nkartatx.com.

Forward-looking statements
Forward-looking statements include, among others, statements of Nkarta's future expectations, plans and prospects. These may include statements concerning Nkarta's expectations regarding any or all of the following: the therapeutic potential of NKX019, as a monotherapy and/or in combination with rituximab, for the treatment of B-cell malignancies, including NHL; the tolerability and safety profile of NKX019; the accessibility and potential outpatient administration of NK cell therapies, including NKX019; plans and timelines for the continued and future clinical development of NKX019; and plans and timelines for the availability or future presentation of NKX019 clinical data. These forward-looking statements are based on current information, assumptions and expectations that are subject to change and involve a number of risks and uncertainties that may cause actual results to differ materially from those contained in the forward-looking statements.

Interim data from clinical trials are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more data on existing patients become available. The clinical trial program is ongoing, and the final results may be materially different from those reflected in any interim data we report. Further, others, including regulatory agencies, may not accept or agree with Nkarta's assumptions, estimates, calculations, conclusions or analyses or may interpret or weigh the importance of data differently, which could impact the value of the particular program, the approvability or commercialization of the particular product candidate or product and the value of the company in general. In addition, the information Nkarta chooses to publicly disclose regarding a particular study or clinical trial is typically a summary of extensive information, and you or others may not agree with what Nkarta determines is the material or otherwise appropriate information to include in Nkarta's disclosure, and any information Nkarta determines not to disclose may ultimately be deemed significant with respect to future decisions, conclusions, views, activities or otherwise regarding a particular product, product candidate or business.

These and other risks and uncertainties are described more fully in Nkarta's filings with the Securities and Exchange Commission ("SEC"), including the "Risk Factors" section of Nkarta's Quarterly Report on Form 10-Q for the quarter ended September 30, 2022, filed with the SEC on November 9, 2022, and Nkarta's other documents subsequently filed with or furnished to the SEC. All forward-looking statements contained in this press release speak only as of the date on which they were made. Except to the extent required by law, Nkarta undertakes no obligation to update such statements to reflect events that occur or circumstances that exist after the date on which they were made.

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