UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d)
of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): April 25, 2022

Nkarta, Inc.
(Exact name of Registrant as Specified in Its Charter)

Delaware	**001-39370**	**47-4515206**
(State or Other Jurisdiction of Incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**
6000 Shoreline Court, Suite 102 South San Francisco, CA		**94080**
(Address of Principal Executive Offices)		**(Zip Code)**

Registrant's Telephone Number, Including Area Code: (415) 582-4923

Not Applicable
(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.0001 par value per share	**NKTX**	**The Nasdaq Stock Market LLC (Nasdaq Global Select Market)**

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§ 230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§ 240.12b-2 of this chapter).

Emerging growth company ☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☒

Item 7.01 Regulation FD Disclosure.

On April 25, 2022, Nkarta, Inc. (the "Company") issued a press release announcing positive preliminary dose finding data for its ongoing Phase 1 clinical trials assessing two co-lead clinical programs, NKX101 and NKX019, which such data is discussed in more detail in Item 8.01 of this Current Report on Form 8-K. A copy of the press release is attached hereto as Exhibit 99.1 and incorporated by reference herein.

Also on April 25, 2022 and as previously disclosed, the Company hosted a conference call to discuss the foregoing preliminary dose finding data. A copy of the slide presentation used during the Company's conference call is attached hereto as Exhibit 99.2 and incorporated by reference herein.

The information in Item 7.01 of this Current Report on Form 8-K (including Exhibit 99.1 and Exhibit 99.2) shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that section, nor shall it be, or be deemed, incorporated by reference in any filings under the Securities Act of 1933, as amended (the "Securities Act"), unless the Company specifically states that the information is to be considered "filed" under the Exchange Act or incorporates it by reference into a filing under the Securities Act or the Exchange Act.

Item 8.01 Other Events.

On April 25, 2022, the Company announced preliminary data from the ongoing study of NKX101 in relapsed/refractory acute myeloid leukemia ("AML") and higher-risk myelodysplastic syndromes ("MDS") and the ongoing study of NKX019 in relapsed/refractory B-cell malignancies.

The preliminary data from the NKX101 Phase 1 clinical trial demonstrate that NKX101 had anti-AML activity and was well-tolerated across both the 2-dose and 3-dose regimens and across all completed 3-dose regimen dose cohorts. There were no reports of dose limiting toxicity, cytokine release syndrome or graft versus host disease in any of the twenty-one patients treated to date. The most common higher grade toxicities experienced by patients on trial, regardless of relationship to NKX101, were myelosuppression and infection, which are common in this patient population after receiving lymphodepleting chemotherapy. Transient, manageable, low-grade infusion reactions were observed on occasion after receiving NKX101. AML blast reduction was observed at every dose level of the 3-dose regimen and most dose levels of the 2-dose regimen, and blast reduction was seen in patients with higher and with lower baseline blast counts. Out of five patients who received the 3-dose regimen at 1 billion or 1.5 billion cells per dose, three achieved a complete response with full hematologic recovery (60%). Additionally, two of the three patients who achieved a complete response had no measurable residual disease (*i.e.*, MRD negative). In total, eleven patients were treated across all dose levels in the 3-dose regimen with seven of those patients achieving a response for an overall response rate of 64%. In addition to the three patients who achieved a complete response at the highest current evaluated doses, one patient achieved a partial response, and three patients achieved a morphologic leukemia free state at lower doses. In the 2-dose regimen, a total of six patients were treated, and one response of complete response with incomplete hematologic response was observed. No responses were observed in any of the four MDS patients treated with NKX101. The Phase 1 trial will continue to enroll relapsed/refractory AML patients with a go-forward regimen of three doses of 1.5 billion cells per dose to determine its safety and the recommended Phase 2 dose.

The preliminary data from the NKX019 Phase 1 clinical trial demonstrate that NKX019 had anti-NHL activity (as defined below) and was well-tolerated across both dose levels evaluated. There were no reports of dose limiting toxicity, cytokine release syndrome or graft versus host disease in any of the thirteen patients treated to date. Generally transient myelosuppression, a toxicity common with lymphodepletion, was the most common higher-grade toxicity reported on trial, regardless of relationship to NKX019. A single patient experienced low-grade infusion reactions of fever which resolved with supportive care. The data demonstrate that five out of six patients with non-Hodgkin lymphoma ("NHL") including diffuse large B cell lymphoma ("DLBCL") responded to NKX019 for an overall response rate of 83% at the 1 billion dose level. Three of the six responding NHL patients achieved a complete response (50%). Four NHL patients were treated at the lower dose of 300 million cells with an overall response rate of 50% and complete response rate of 25%. Of the three adult patients with acute lymphocytic leukemia who were treated with NKX019, none achieved a response. The Phase 1 clinical trial will continue to enroll relapsed/refractory NHL patients at a dose of 1.5 billion cells per dose as part of a 3-dose regimen to determine its safety and the recommended Phase 2 dose.

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 the Company reports. Further, others, including regulatory agencies, may not accept or agree with the Company'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 the Company chooses to publicly disclose regarding a particular study or clinical trial is typically a summary of extensive information, and others may not agree with what the Company determines is the material or otherwise appropriate information to include in its disclosure, and any information the Company 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.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit Number	Description
99.1	Press Release issued on April 25, 2022.
99.2	Clinical Program Update Presentation, dated April 2022.
104	Cover Page Interactive Data File (embedded within the Inline XBRL document).

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Nkarta, Inc.

Date: April 25, 2022

By: /s/ Alicia Hager

Alicia J. Hager, J.D., Ph.D.
Chief Legal Officer

Exhibit 99.1

Nkarta Announces Positive Preliminary Dose Finding Data for Two Lead Engineered Natural Killer Cell Programs

NKX101 – 3 of 5 patients with relapsed / refractory AML treated with a three-dose regimen consisting of 1B or 1.5B CAR NK cells per dose achieved complete response with full hematologic recovery (60% CR rate); 2 of 3 CRs are MRD negative

NKX019 – 5 of 6 patients with relapsed / refractory NHL treated with a three-dose regimen consisting of 1B CAR NK cells per dose achieved response (83% ORR) and 3 of 6 achieved complete response (50% CR rate); responses included DLBCL

No cytokine release syndrome (CRS), neurotoxicity or graft versus host disease (GvHD) reported for either program

Higher dose regimen of 1.5 billion x 3 doses of CAR NK cells is being evaluated in both programs

Updated data will be submitted for presentation at a future medical meeting

Conference call scheduled for today, April 25 at 8:00 am ET

SOUTH SAN FRANCISCO, Calif., Apr. 25, 2022 — Nkarta, Inc. (Nasdaq: NKTX), a biopharmaceutical company developing engineered natural killer cell therapies to treat cancer, today announced positive preliminary Phase 1 data from independent dose finding studies of its two lead chimeric antigen receptor (CAR) natural killer (NK) cell therapy candidates, NKX101 and NKX019, in two distinct groups of hematologic malignancies.

“We’re excited to see our CAR NK co-lead candidates, NKX101 and NKX019, show such striking early single-agent activity in heavily pretreated patient populations, with an exceptional safety profile without the side effects associated with CAR T cell therapies,” said Paul J. Hastings, President and CEO of Nkarta. “These encouraging early data across multiple indications further validate Nkarta’s best-in-class NK cell platform, as we seek to transform cancer treatment by bringing together the safety advantages of NK cells with an off-the-shelf modality designed to make the benefits of cell therapy accessible in a community setting.”

In the first trial, evaluating NKX101, in relapsed / refractory (r/r) acute myeloid leukemia (AML) and myelodysplastic syndrome (MDS), three of five patients with heavily pre-treated AML who received the higher dose level in a three-dose regimen achieved a complete response (60% CR) with hematologic recovery, with two of the three responses MRD (minimal residual disease) negative. There is currently no standard of care for these patients.

In the second trial, evaluating NKX019, in r/r B cell malignancies, three of six patients treated at the higher dose level in a three-dose regimen showed a complete response (50% CR), including one patient with aggressive diffuse large B cell lymphoma (DLBCL) and one patient with mantle cell lymphoma (MCL). In both trials, no dose limiting toxicity was observed and there were no CAR T like adverse events of any grade.

Nkarta continues to enroll patients in three-dose regimens of 1.5 billion NK cells per dose in the dose finding portions of the NKX101 and NKX019 trials. Data from both programs, including additional follow-up and updates on the higher dose cohorts, will be submitted for presentation at a future medical meeting.

Evaluating NKX101 in r/r acute myeloid leukemia

NKX101 is an allogeneic, cryopreserved, off-the-shelf cancer immunotherapy candidate that uses NK cells engineered to target NKG2D ligands on cancer cells. NKX101 is being evaluated in a dose-escalation Phase 1 study as a multi-dose, multi-cycle monotherapy in patients with r/r AML and higher-risk MDS.

As of April 21, 2022, 21 patients were enrolled and dosed, 17 with a diagnosis of AML and four with MDS. Patients were heavily pre-treated and had received a median of three prior lines of therapy (range of 1 to 12). All patients with AML had received prior treatment with venetoclax. At baseline, the median percentage of blast cells in bone marrow was 27% (range of 3 to 85%).

“Relapsed/refractory acute myeloid leukemia (AML) is a historically hard-to-treat disease, and given the lack of effective treatments, people with cancer and those who treat them are faced with few options,” said Marcello Rotta, M.D., Colorado Blood Cancer Institute (CBCI), a part of the Sarah Cannon Cancer Institute at Presbyterian/St. Luke’s Medical Center, and investigator in the NKX101 clinical trial. “Complete responses with corresponding MRD negativity in r/r AML using engineered NK cells, as seen in these preliminary findings, is encouraging. We look forward to leading further investigation to better understand the full potential of a CAR NK approach.”

Safety in NKX101

NKX101 was well tolerated. No dose-limiting toxicities were observed. Toxicities associated with engineered chimeric antigen receptor (CAR) T cell treatments were not observed at any dose, including cytokine release syndrome, graft-versus-host disease, and immune effector cell-associated neurotoxicity (ICANS). The most common higher-grade adverse events were myelosuppression - a condition resulting in fewer red blood cells, white blood cells and

platelets, and infection, which are common in this patient population post lymphodepletion. Two patients experienced Grade 2 infusion reactions, transient fever and fluid responsive hypotension. (See table 1.) The emerging safety profile of NKX101 is positively differentiated from those of many cell therapies.

NKX101 Safety (Table 1)

≥ G3 AEs in > 1 subject	Total (N=21)
Hematologic Events	
Thrombocytopenia	10 (48%)
Febrile neutropenia	8 (38%)
Neutropenia	7 (33%)
Anemia	6 (29%)
White blood cell count decreased	2 (10%)
Leukocytosis	2 (10%)
Infections	
Pneumonia	5 (24%)
Sepsis	2 (10%)
Other	
Hypoxia^	4 (19%)
Fatigue	2 (10%)

Treatment emergent adverse events regardless of relationship based on interim data from open clinical database as of 21 Apr 2022

^ *In the setting of febrile neutropenia/pneumonia*

Clinical Activity in NKX101

Twenty-one patients who received NKX101 were assessed (See table 2.) In the two highest dose-level cohorts (3 doses of 1 billion cells or 3 doses of 1.5 billion cells), 3 of 5 patients with AML achieved a complete response (60% CR) with hematologic recovery. Two of the 3 reported complete responses were MRD (minimal residual disease) negative. MRD negativity is broadly viewed as an important quantitative measure of disease burden in AML and is associated with increased disease-free survival and decreased risk of recurrence. For all cohorts in the dose finding portion, 8 of 17 patients with AML achieved an overall response (47% ORR) and 3 of 17 achieved a complete response with hematologic recovery (18% CR). Four patients with MDS were treated, with no response observed.

NKX101 Clinical Activity (Table 2)

	AML: ORR *(CR, CRi, MLFS, PR)*	**AML: CR**	**MDS: ORR** *(CR, marrow CR, PR)*
NKX101 – 3 doses / cycle (Day 0, 7, 14)			
1.0B / 1.5B x 3	3/5 (60%)	**3/5 (60%) 2/3 MRD-**	0/2 (0%)
100M / 300M x 3	4/6 (67%)	0/6 (0%)	No patients treated
Overall Responses	7/11 (64%)	3/11 (27%)	0/2 (0%)
NKX101 – 2 doses / cycle (Day 0, 7)			
1.5B x 2	0/3 (0%)	0/3 (0%)	No patients treated
150M / 450M x 2	1/3 (33%)	0/3 (0%)	0/2 (0%)
Overall Responses	1/6 (17%)	0/6 (0%)	0/2 (0%)

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 monotherapy in patients with r/r B cell malignancies.

As of April 21, 2022, 13 patients were enrolled and dosed. Ten patients entered the study with a diagnosis of non-Hodgkin lymphoma (NHL), 5 of which were aggressive large B cell lymphoma (LBCL). Patients had received a median of 4 prior lines of therapy (range of 2 to 7). To date, enrollment has included patients with aggressive disease presentations and extensive lesions throughout the body. Patients were enrolled at clinical trial sites in Australia (10) and the United States (3).

“The curative potential of CAR T cell therapy is truly remarkable, but many eligible patients are still not cured, and the safety and logistical challenges of approved autologous CAR T therapy are barriers,” 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. “The NKX019 trial exemplifies the continued progress of our field. NKX019 showed clear activity, in patients with a range of NHL histologies, without the sort of toxicities expected of other cellular therapies, supporting continued exploration of this CAR NK candidate.”

Safety in NKX019

NKX019 was well tolerated. No dose-limiting toxicities were observed. Toxicities associated with CAR T cell treatments were not observed at any dose, including cytokine release syndrome, graft-versus-host disease, and ICANS. 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 3.) One patient experienced Grade 1 infusion reactions. The emerging safety profile of NKX019 is positively differentiated from those of many cell therapies.

NXK019 Safety (Table 3)

≥ G3 AEs in > 1 subject	Total (N=13)
Hematologic Events	
Neutropenia	9 (69%)
Thrombocytopenia	5 (38%)
Febrile neutropenia	3 (23%)
Anemia	2 (15%)

Treatment emergent adverse events regardless of relationship based on interim data from open clinical database as of 21 Apr 2022

Clinical Activity in NXK019

Thirteen patients who received NKX019 were assessed. (See table 4.) Five of 6 patients with NHL in the cohort receiving 3 doses of 1 billion cells achieved a response (83% ORR), and 3 of 6 achieved a complete response (50% CR rate). For all cohorts in the dose finding portion, 7 of 10 evaluable patients with NHL achieved an objective response (70% ORR) and 4 of 10 achieved a complete response (40% CR). Three patients with ALL were treated, with no response observed.

NXK019 Clinical Activity (Table 4)

	NKX019 - 300M cells x 3 doses		NKX019 - 1B cells x 3 doses	
	ORR *(CR, PR)*	**CR**	**ORR** *(CR, PR)*	**CR**
All NHL	**2/4 (50%)**	**1/4 (25%)**	**5/6 (83%)**	**3/6 (50%)**
LBCL	1/3 (33%)	0/3 (0%)	1/2 (50%)	1/2 (50%)
MCL	No patients treated	No patients treated	1/1 (100%)	1/1 (100%)
FL	1/1 (100%)	1/1 (100%)	2/2 (100%) [2PR]	0/2 (0%)
MZL	No patients treated	No patients treated	1/1 (100%)	1/1 (100%)
B-ALL	0/1 (0%)	0/1 (0%)	0/2 (0%)	0/2 (0%)

About the NKX101 Trial

NKX101 is an allogeneic, cryopreserved, off-the-shelf cancer immunotherapy candidate that uses natural killer (NK) cells engineered to target NKG2D ligands on cancer cells. The dose-finding portion of the NKX101 Phase 1 study evaluates the safety and anti-tumor activity of NKX101 as a multi-dose, multi-cycle monotherapy following lymphodepletion in patients with r/r AML and higher-risk MDS. Patients must have received at least one prior therapy, and patients diagnosed with a disease mutation must have received a targeted therapy, where approved.

Patients in the NKX101 Phase 1 trial received a cycle of treatment consisting of fludarabine/ cyclophosphamide lymphodepletion followed by either a three-dose regimen where NKX101 cells were given on Days 0, 7, and 14; or a two-dose regimen where the cells were given on Days 0 and 7. Patients received doses of 100 million, 300 million, 1 billion or 1.5 billion NK cells three times in the 3-dose regimen, or doses of 150 million, 450 million or 1.5 billion NK cells two times in the 2-dose regimen. Based on tumor response and tolerability assessment, patients were eligible to receive additional treatment cycles. Disease assessment was performed by investigator review according to the ELN response criteria for patients with AML and Cheson response criteria for patients with MDS.

About the NKX019 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 who received prior autologous CAR-T therapy were not eligible.

Patients in the NKX019 trial received a cycle of treatment consisting of fludarabine/cyclophosphamide lymphodepletion 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 or 1 billion cells three times in a cycle. Based on tumor response and tolerability assessment, patients were eligible to receive additional treatment cycles. 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.

About NKX101

NKX101 is an allogeneic, cryopreserved, off-the-shelf cancer immunotherapy candidate that uses natural killer (NK) cells derived from the peripheral blood of healthy donors. It is engineered with a chimeric antigen receptor (CAR) targeting NKG2D ligands on tumor cells. NKG2D, a key activating receptor found on naturally occurring NK cells, induces a cell-killing immune response through the detection of stress ligands that are widely expressed on cancer cells. NKX101 is also engineered with membrane-bound form of interleukin-15 (IL15) for greater persistence and activity without exogenous cytokine support. To learn more about the NKX101 clinical trial in adults with AML or MDS, please visit ClinicalTrials.gov.

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 regarding the future clinical development, tolerability, safety profile, accessibility, and therapeutic potential of Nkarta's product candidates. 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 Annual Report on Form 10-K for the quarter ended December 31, 2021, filed with the SEC on March 17, 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.

Nkarta Media/Investor Contact:
Greg Mann
Nkarta, Inc.
gmann@nkartatx.com

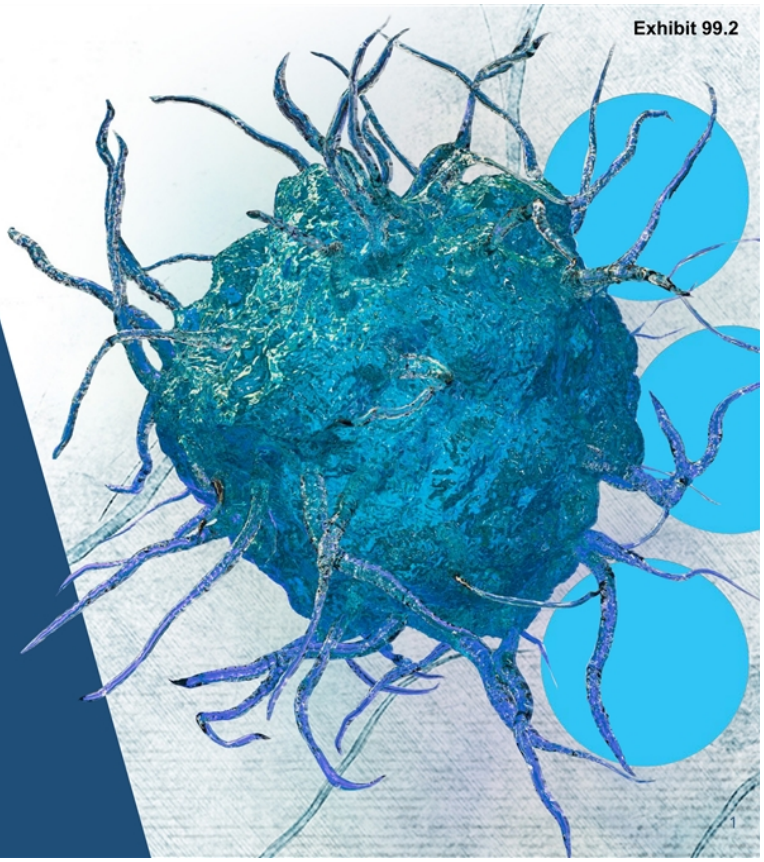
Exhibit 99.2

nkarta
THERAPEUTICS

Clinical Program Update

25 April 2022

Clinical Data as of 21 April 2022



Forward looking statements

This presentation contains forward-looking statements, within the meaning of the Private Securities Litigation Reform Act of 1995, regarding future events and the future results of the company that are based on current expectations, estimates, forecasts, and projections about the industry in which the company operates and the future of our business, future plans and strategies, projections, anticipated trends and events, the economy, and other future conditions, and the beliefs and assumptions of the management of the company. Words such as **"address," "anticipate," "believe," "consider," "continue," "develop," "estimate," "expect," "further," "goal," "intend," "may," "plan," "potential," "project," "seek," "should," "target," "will,"** variations of such words, and similar expressions are intended to identify such forward-looking statements. Such statements reflect the current views of the company and its management with respect to future events and are subject to inherent risks, uncertainties, and changes in circumstances that are difficult to predict and may be outside our control. Therefore, you should not rely on any of these forward-looking statements. Should one or more of these risks or uncertainties materialize, or should underlying assumptions prove incorrect, the company's actual results, performance, or achievements could differ materially from the results expressed in, or implied by, these forward-looking statements. Please see section entitled "Risk Factors" in our annual, quarterly and other filings with the Securities and Exchange Commission for a description of these risks and uncertainties.

This presentation has been prepared by the company based on information it has obtained from sources it believes to be reliable. Summaries of documents contained in this presentation may not be complete. The company does not represent that the information herein is complete. The information in this presentation is current only as of the date on the cover, and the company's business or financial condition and other information in this presentation may change after that date. The company undertakes no obligation to update any forward-looking statements in order to reflect any event or circumstance occurring after the date of this presentation or currently unknown facts or conditions.

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 the company reports. Further, others, including regulatory agencies, may not accept or agree with the company'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 the company 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 the company determines is the material or otherwise appropriate information to include in its disclosure, and any information the company 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.

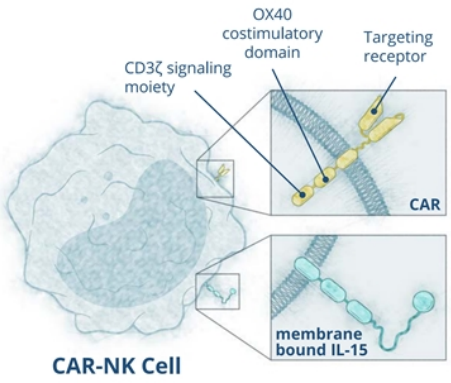
Best-in-class platform driving off-the-shelf CAR NK cell therapies

Co-lead programs in hematologic malignancies

NKX101

Targeting NKG2D ligands

- Phase 1 in r/r AML and higher-risk MDS
- Orphan Drug Designation
- NKG2D receptor is primary driver of NK cell activation and tumor killing



NKX019

Targeting CD19

- Phase 1 in r/r B cell malignancies
- Validated target
- Opportunity to differentiate from CAR T cells with broad patient access

nkarta THERAPEUTICS

R/R, relapsed/refractory; AML, acute myeloid leukemia; MDS, myelodysplastic syndrome; NK, natural killer; CAR, chimeric antigen receptor.

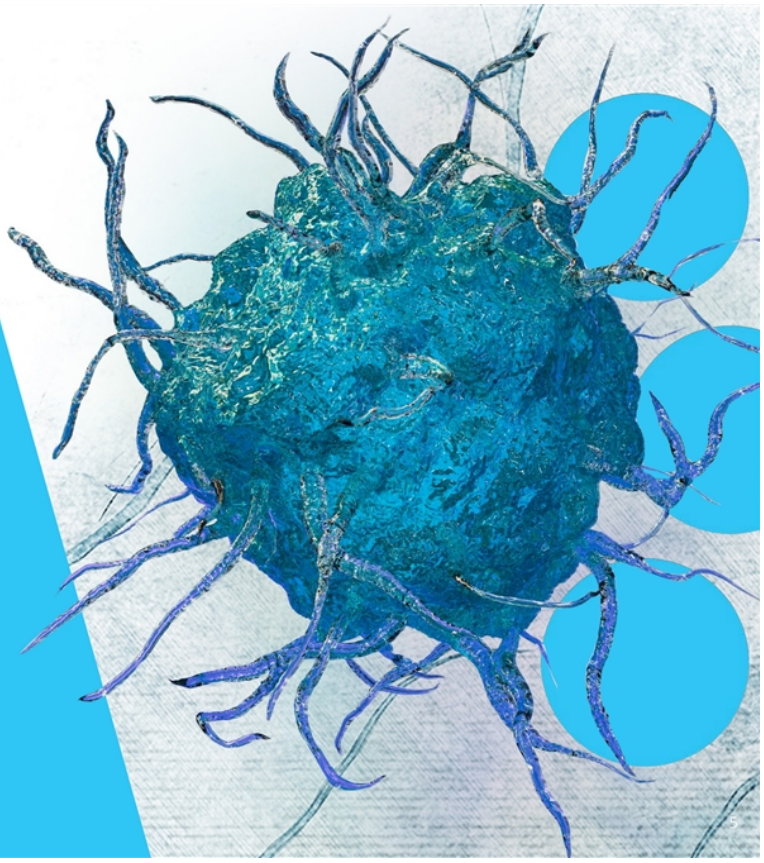
NKX101 and NKX019: Well tolerated and highly active in heavily pre-treated r/r AML and r/r NHL patients, respectively

- **NKX101**
  - No DLTs or cases of CRS, GvHD or neurotoxicity
  - 3 of 5 patients achieved CR (60%) in r/r AML at highest two dose levels in 3 dose regimen
    - 2 out of 3 CRs were MRD negative
  - Responses and blast reduction observed across dose levels
- **NKX019**
  - No DLTs or cases of CRS, GvHD or neurotoxicity
  - 5 of 6 patients responded (83%) and 3 of 6 patients achieved complete response (50%) in NHL at 1B cells x 3
    - Complete responses observed in multiple NHL histologies including DLBCL

Based on interim data from open clinical database as of 21 Apr 2022

DLT, dose-limiting toxicity; CRS, cytokine release syndrome; GvHD, graft-versus-host disease; MRD-, minimal residual disease negative; DLBCL, diffuse large B cell lymphoma.

NKX101 for the Treatment of Relapsed/Refractory AML and Higher-Risk MDS



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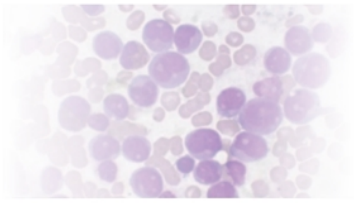
AML is a rapidly progressing leukemia with a poor prognosis



Cancer of immature blood cells or "*blasts*" in the bone marrow

- Treatment requires multiple rounds of intensive chemotherapy
- Most patients will ultimately relapse, even after prior CR
- Patients unfit for intensive chemotherapy may achieve CR with venetoclax but eventually relapse

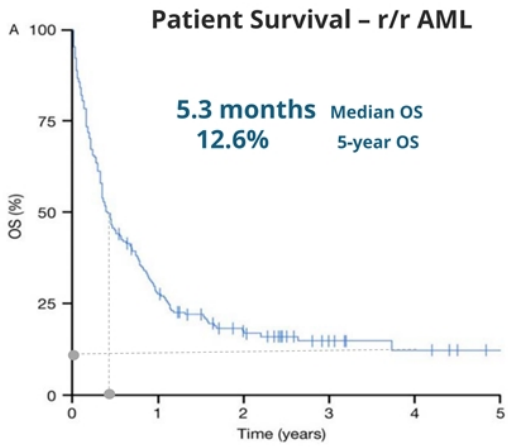
Treatment Options - r/r AML

- Low response rate with traditional chemotherapy

  12 to 18% CR rate
- Approximately 50% of patients have targetable mutations (*FLT3*, *IDH1/2*)

  19 to 25% CR rate
- Long-term remission often depends on HCT in patients who are fit enough to receive it

  Pre-transplant CR improves outcomes

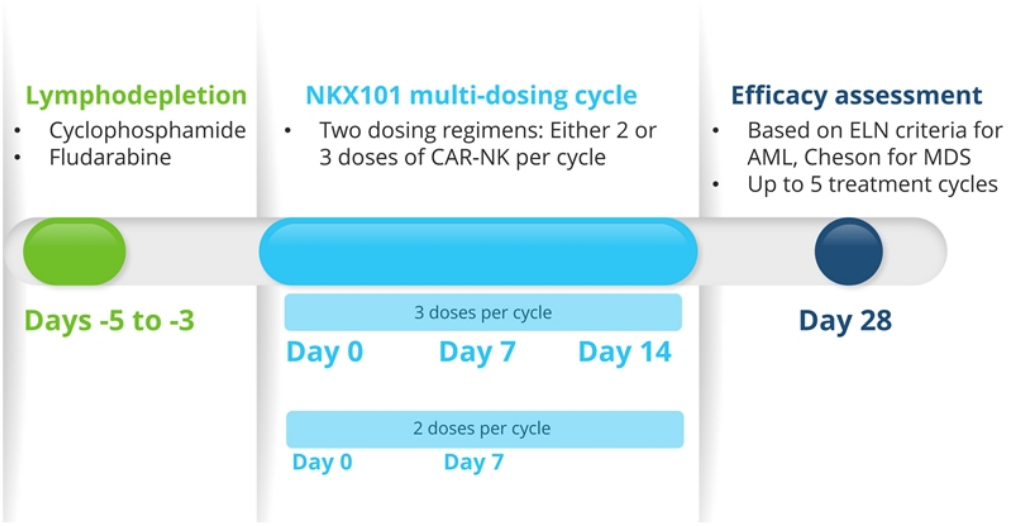


AML, acute myeloid leukemia; CR: complete response; HCT: hematopoietic stem cell transplant; OS: overall survival; R/R: relapsed/refractory

Pelcovits A, et al. 2013; O'Donnell MR, et al. 2012; Brandwein, et al. 2020

NKX101 Phase 1 Trial Design

- **High-risk pre-treated patient population**
  - r/r AML or higher risk MDS, ≥1 therapy
  - Must have received targeted therapy, where approved
  - Pre- and post-allogeneic transplant
- **Key Objectives**
  - Safety and tolerability
  - Anti-tumor activity
  - Pharmacokinetics



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NKX101 patients were heavily pre-treated and multiply-relapsed with poor prognosis

Characteristics	Total (N=21)
Age, median (range)	60 (22 - 76)
Diagnosis, AML/MDS, n	17/4
Baseline ECOG 1, n	12
Months since diagnosis, median (range)	**13 (2 – 54)**
Baseline blast %, median (range)	27 (3 - 85)
Baseline ANC <1 × 10^9/L	15
Median prior lines of therapy (range)	**3 (1 - 12)**
Prior allogeneic transplant, n	4
Prior venetoclax, n	20

3 Median lines of prior therapy

100% 17 of 17 patients with AML had prior venetoclax

71% 15 of 21 patients had neutropenia

ANC: absolute neutrophil count; ECOG: Eastern Cooperative Oncology Group.

Based on interim data from open clinical database as of 21 Apr 2022

NKX101 was well-tolerated across all regimens and dose levels

- **No dose-limiting toxicities**
  - Currently enrolling cohort at 1.5 billion cells × 3 doses
- **Myelosuppression and infection consistent with lymphodepletion and underlying disease were the most common higher-grade toxicities**
  - Two patients with Grade 2 infusion reactions, transient fever, chills, fluid responsive hypotension
- **No CAR T-like toxicities observed at any dose**
  - No cytokine release syndrome
  - No ICANS/ neurotoxicity
  - No graft-versus-host disease

≥ G3 AEs in > 1 subject	Total (N=21)
Hematologic Events	
Thrombocytopenia	10 (48%)
Febrile neutropenia	8 (38%)
Neutropenia	7 (33%)
Anemia	6 (29%)
White blood cell count decreased	2 (10%)
Leukocytosis	2 (10%)
Infections	
Pneumonia	5 (24%)
Sepsis	2 (10%)
Other	
Hypoxia^	4 (19%)
Fatigue	2 (10%)

**Treatment emergent adverse events regardless of relationship*
Based on interim data from open clinical database as of 21 Apr 2022
^ In the setting of febrile neutropenia/pneumonia
ICANS: Immune Effector Cell- Associated Neurotoxicity Syndrome.

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Favorable dose response to both increased number of cells / dose and number of doses / cycle in AML

	AML: ORR *(CR, CRi, MLFS, PR)*	AML: CR	MDS: ORR *(CR, marrow CR, PR)*
NKX101 – 3 doses / cycle (Day 0, 7, 14)			
1B / 1.5B x 3	3/5 (60%)	3/5 (60%) **2/3 MRD-**	0/2 (0%)
100M / 300M x 3	4/6 (67%)	0/6 (0%)	No patients treated
Overall Responses	**7/11 (64%)**	**3/11 (27%)**	0/2 (0%)
NKX101 – 2 doses / cycle (Day 0, 7)			
1.5B x 2	0/3 (0%)	0/3 (0%)	No patients treated
150M / 450M x 2	1/3 (33%)	0/3 (0%)	0/2 (0%)
Overall Responses	**1/6 (17%)**	**0/6 (0%)**	0/2 (0%)

Based on interim data from open clinical database as of 21 Apr 2022

AML, acute myeloid leukemia; CR, complete response; CRi; complete response with incomplete hematologic recovery; HR-MDS, higher-risk myeloid disease syndrome; MLFS, morphological leukemia-free state; MRD-, minimal residual disease negative; ORR, overall response rate; PR, partial response.

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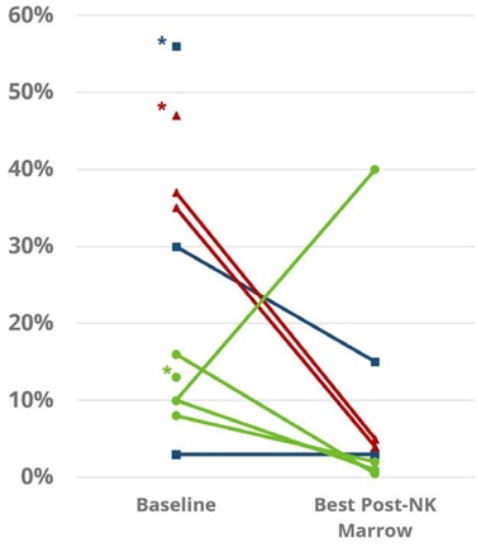
NKX101 drives AML blast reduction at all dose levels in 3 dose regimen with some patients achieving MRD-

Dose Level	Baseline marrow blasts[#]	Best post-NK response
1.5B × 3	13%	PD
1B × 3	8%	**CR (MRD-)**
	16%	**CR (MRD+)** MLFS end of Cycle 1, CR end of Cycle 2
	10%	PD
	10%	**CR (MRD-)**
300M × 3	35%	MLFS
	37%	MLFS
	47%	PD
100M × 3	30%	PR
	56%	PD
	3%	MLFS

3/5 CR at highest doses in go-forward 3-dose regimen



MLFS, morphologic leukemia free state; MRD-, minimal residual disease negative; MRD+, minimal residual disease positive; PR, partial response; PD, progressive disease.

* PD, Peripheral blast progression

[#]Baseline is the most recent available data prior to first dose
Based on interim data from open clinical database as of 21 Apr 2022

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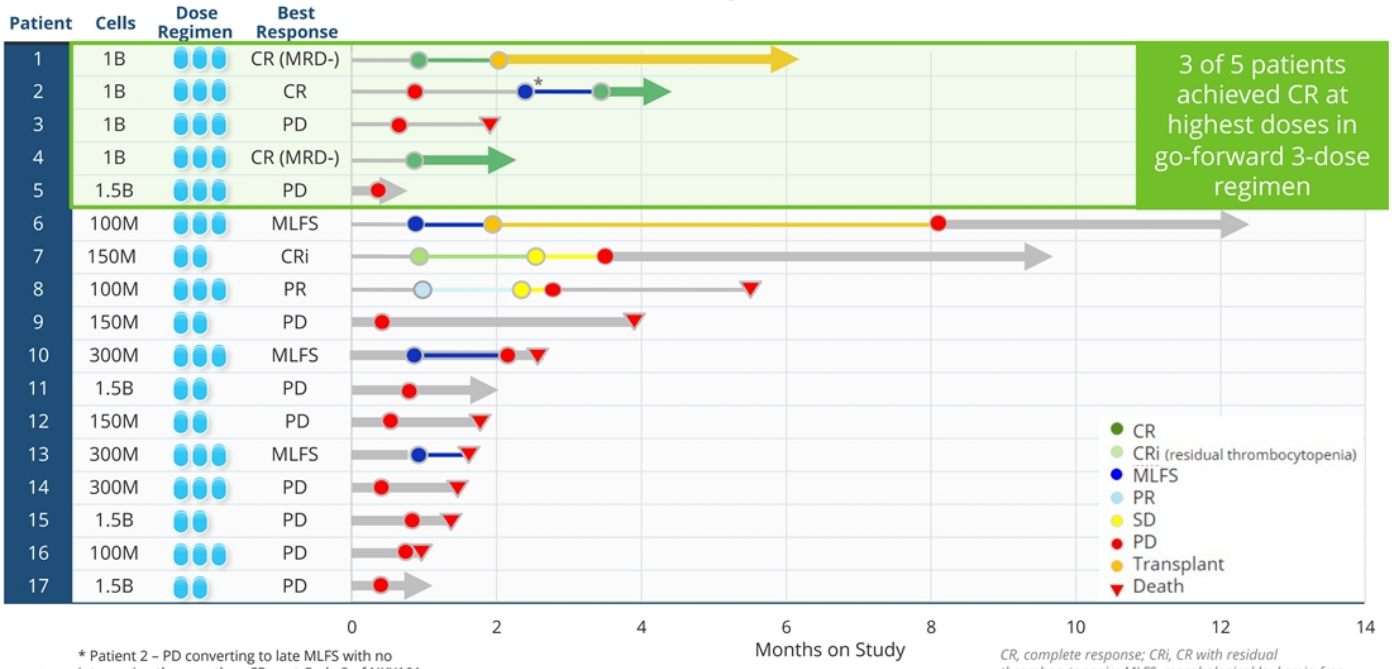
NKX101 demonstrated clinical activity across dose levels in AML



* Patient 2 – PD converting to late MLFS with no intervening therapy, then CR post Cycle 2 of NKX101

CR, complete response; CRi, CR with residual thrombocytopenia; MLFS, morphological leukemia-free state; PD, progressive disease; PR, partial response; SD, stable disease.

Based on interim data from open clinical database as of 21 Apr 2022

Case Study: Molecular remission following NKX101

Patient Profile

- 68-year-old male
- **AML** with *IDH1* mutation
- Refractory to 4 prior lines of therapy, including venetoclax, ivosidenib and gemtuzumab
- At study entry, 8% blasts by morphology with 25% del(20q) by FISH

Efficacy

Post- Cycle 1 assessment

- CR, MRD- via FISH
- Normocellular marrow

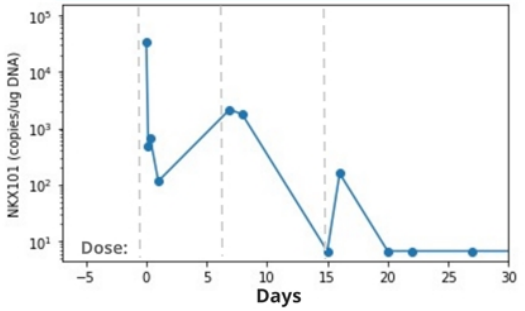
Safety

- Well tolerated
- ≥ Grade 3 events, anemia, neutropenia, decreased platelet count

Follow up

- Underwent consolidative HCT
- In CR 6 months after treatment with NKX101

NKX101 detected after every dose
3 doses of 1 billion CAR NK cells per dose
Expected NK-like PK and clearance Day 20



Based on interim data from open clinical database as of 21 Apr 2022

FISH, fluorescence in situ hybridization; HCT, hematopoietic cell transplant; MRD-, minimal residual disease negative.

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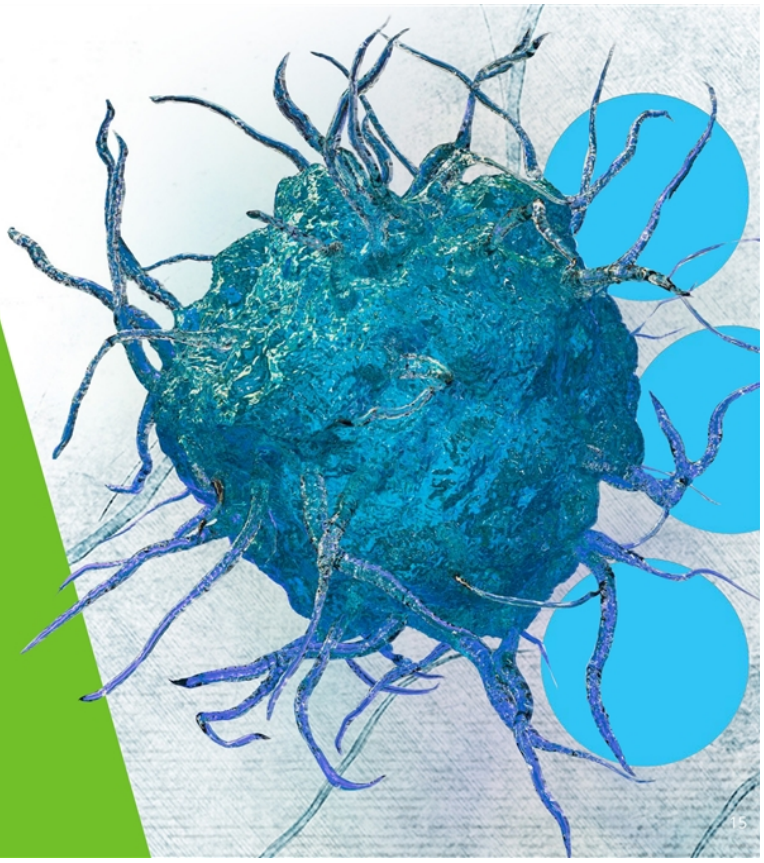
Summary: NKX101 was well-tolerated and highly active in heavily pre-treated AML patients

- No DLTs or cases of CRS, GvHD or neurotoxicity
- 3 of 5 patients achieved CR (60%) in r/r AML at highest two dose levels in 3-dose regimen
  - 2 out of 3 CRs were MRD negative
- Responses and blast reduction observed across dose levels
  - Dose response
  - Deepening of response with additional cycle
- Next steps
  - Dosing of AML patients at 1.5B cells x 3 in dose escalation study
  - Potential for approval in r/r AML with single arm expansion cohort data
  - Potential to move to earlier lines in combination
  - Next data update 2H 2022

Based on interim data from open clinical database as of 21 Apr 2022

NKX019 for the Treatment of Relapsed/Refractory B-Cell Malignancies



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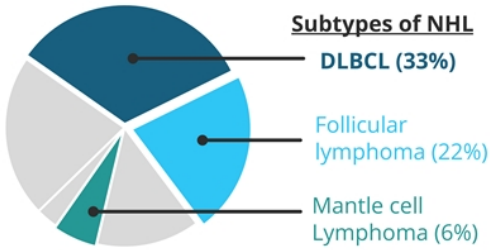
Non-Hodgkin lymphomas are cancers derived from B cells and include aggressive and indolent forms

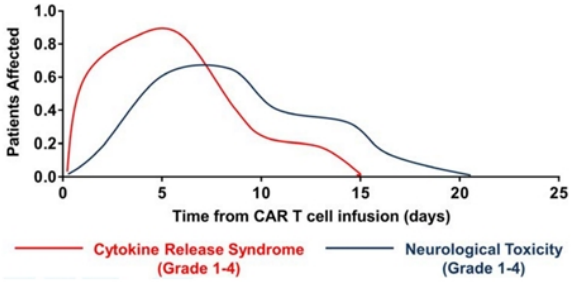
- All forms express B-cell antigens, such as CD19
- DLBCL has a poor prognosis and r/r disease is especially challenging
  - **32-54% CR** rate in r/r LBCL with CAR T cells
  - Other salvage therapies median OS of ~6 months



Safety and accessibility limit widespread CAR T use

- Toxicities are common and life-threatening
  - Over 25% of patients require ICU admission
  - Grade 3+ CRS: 13-49%, Grade 3+ ICANS: 18-31%
- Limited number of specialized sites
- 9-34% of patients in pivotal trials did not receive cells

CAR T toxicity observed in 60 to 80% of patients



Lowry and Linch. 2006; Crump M, et al. 2017; Azoulay et al, 2020; Locke, 2017; YESCARTA® USPI; KYMRIAH® USPI; BREYANZI® USPI

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CAR, chimeric antigen receptor; CRS, cytokine release syndrome; DLBCL, diffuse large B-cell lymphoma; ICANS: immune cell associated neurotoxicity syndrome; ICU: intensive care unit; LBCL: large B-cell lymphoma; NHL, non-Hodgkin lymphoma; USPI: U.S. Prescribing Information. US, United States.

NKX019 Phase 1 Trial Design

- **High-risk, high-need patient population**
  - r/r NHL, CLL and B-ALL
  - ≥2 prior therapies
  - CAR T naïve
- **Key Objectives**
  - Safety and tolerability
  - Anti-tumor activity
  - Pharmacokinetics

NCT05020678

CAR, chimeric antigen receptor; CLL, chronic lymphocytic leukemia; B-ALL, B cell acute lymphocytic leukemia; NHL, non-Hodgkin lymphoma.

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NKX019

Mirroring real-world CAR T, NKX109 patients were heavily pre-treated, with a poor prognosis

Characteristic	Total (N=13)
Age, median (range)	**54 (21-82)**
Baseline ECOG 1	**7**
Australia/US	**10/3**
Diagnosis	
Large B cell lymphoma[#]	**5**
Follicular lymphoma	**3**
Marginal zone lymphoma	**1**
Mantle cell lymphoma	**1**
B-cell acute lymphoblastic leukemia	**3**
Prior lines of therapy, median (range)	**4 (2 - 7)**

Based on interim data from open clinical database as of 21 Apr 2022

50% 5 of 10 NHL patients with aggressive LBCL

4 Median lines of prior therapy

[#]*LBCL includes 4 DLBCL and 1 FL3b*

ECOG, Eastern Cooperative Oncology Group.

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NKX019 was well-tolerated across all dose levels

- **No dose-limiting toxicities up to 1 billion cells x 3 dose level**
  - Currently enrolling cohort at 1.5 billion cells × 3 doses
- **Myelosuppression consistent with LD was the most common higher-grade toxicity**
  - One patient with Grade 1 infusion reaction, transient fever
- **No CAR T-like toxicities at any dose**
  - No cytokine release syndrome
  - No ICANS/ neurotoxicity
  - No graft-versus-host disease

≥ G3 AEs in > 1 subject	Total (N=13)
Hematologic Events	
Neutropenia	9 (69%)
Thrombocytopenia	5 (38%)
Febrile neutropenia	3 (23%)
Anemia	2 (15%)

**Treatment emergent adverse events regardless of relationship based on interim data from open clinical database as of 21 Apr 2022*

LD: lymphodepletion, ICANS: Immune Effector Cell- Associated Neurotoxicity Syndrome.

Favorable dose response in aggressive NHL with increased dose of NKX019

	NKX019 300M cells x 3 doses		NKX019 1B cells x 3 doses	
	ORR *(CR, PR)*	**CR**	**ORR** *(CR, PR)*	**CR**
All NHL	**2/4 (50%)**	**1/4 (25%)**	**5/6 (83%)**	**3/6 (50%)**
LBCL[#]	1/3 (33%)	0/3 (0%)	1/2 (50%)	1/2 (50%)
MCL	No patients treated	No patients treated	1/1 (100%)	1/1 (100%)
FL	1/1 (100%)	1/1 (100%)	2/2 (100%) [2 PR]	0/2 (0%)
MZL	No patients treated	No patients treated	1/1 (100%)	1/1 (100%)
B-ALL	0/1 (0%)	0/1 (0%)	0/2 (0%)	0/2 (0%)

[#]LBCL includes 4 DLBCL and 1 FL3b

ALL, acute lymphoblastic leukemia; CR, complete response; FL, follicular lymphoma; IR, indeterminant response; LBCL, large B-cell lymphoma; MCL, mantle zone lymphoma; NHL, non-Hodgkin lymphoma; ORR, overall response rate; PR, partial response.

Based on interim data from open clinical database as of 21 Apr 2022

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NKX019 drove responses in every NHL subtype treated

Dose Level	Diagnosis	Baseline Disease	Best Response
1B x 3	DLBCL	Nodal	**CR**
	MCL	Nodal, marrow	**CR**
	FL	Nodal, liver, Spleen	**PR**, now in 3rd cycle
	MZL	Nodal, extra-nodal	**CR**
	FL	Nodal	**PR**, now in 2nd cycle
	DLBCL	Liver, bone, marrow	SD, now in 2nd cycle
300M x 3	FL	Nodal, spleen	**CR**
	FL3b	Nodal, liver, Spleen	**PR**
	DLBCL	Bulky nodal, liver, extra-nodal	PD
	DLBCL	Nodal, spleen	PD

- Dose response observed
- Responses observed after single cycle and across indolent and aggressive histologies
- All CRs are ongoing
- Protocol includes consolidation of CR
- Outpatient administration allowed after 1st cycle

Based on interim data from open clinical database as of 21 Apr 2022

CR, complete response; DLBCL, diffuse large B cell lymphoma; FL, follicular lymphoma; FL3b, follicular lymphoma Grade 3b; IR, indeterminate response using LYRIC refinement; MCL, mantle cell lymphoma; MZL, marginal zone lymphoma; PR, partial response; PD, progressive disease.

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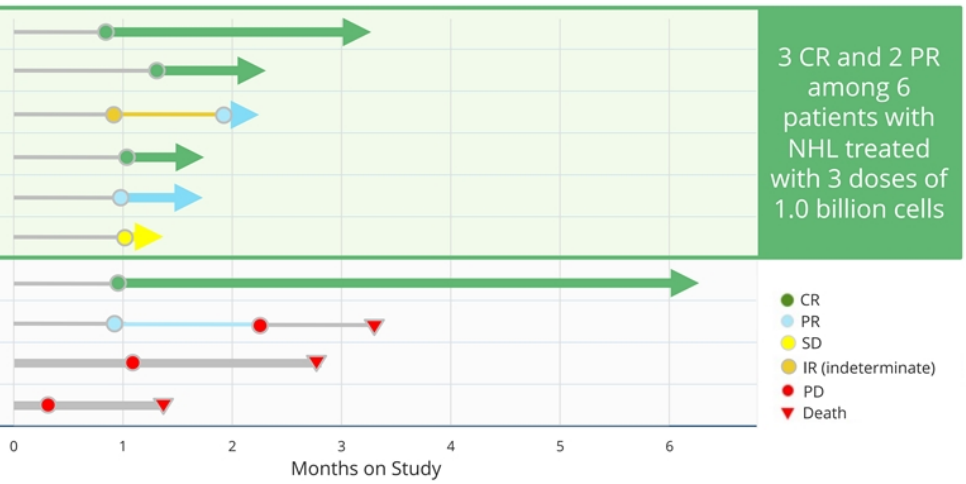
NKX019 provides rapid responses, including complete responses

Patient	Cells	Diagnosis	Best Response
1	1.0B x 3	DLBCL	**CR**
2	1.0B x 3	MZL	**CR**
3	1.0B x 3	FL	**PR**, now in 3rd cycle
4	1.0B x 3	MCL	**CR**
5	1.0B x 3	FL	**PR**, now in 2nd cycle
6	1.0B x 3	DLBCL	SD
7	300M x 3	FL	**CR**
8	300M x 3	FL3b	**PR**
9	300M x 3	DLBCL	PD
10	300M x 3	DLBCL	PD



Based on interim data from open clinical database as of 21 Apr 2022

aNHL, aggressive NHL; CR, complete response; DLBCL, diffuse large B-cell lymphoma; FL, follicular lymphoma; iNHL, indolent NHL; MCL, mantle cell lymphoma; MZL, marginal zone lymphoma; NHL, non-Hodgkin's lymphoma; PD, progressive disease; PR, partial response; SD, stable disease.

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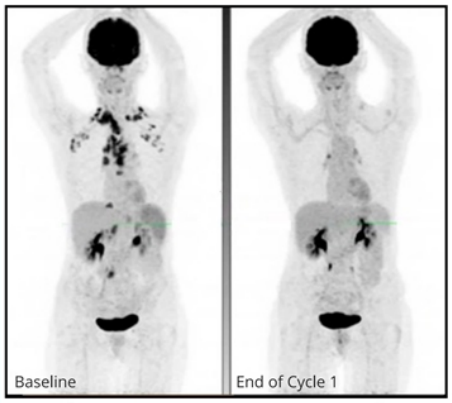
Case studies: Single cycle, rapid complete responses with NKX019 across doses in r/r NHL

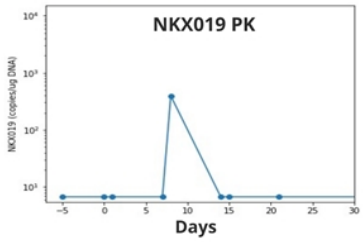
Patient Profile
- 73-year-old female with extensive high-risk FL
- Relapsed after R-bendamustine, refractory to experimental BCL2i

Efficacy
- **CR after 1 cycle of 300M cells x 3**

Safety
- No ≥ Grade 3 AEs

Follow-up
- Remains in CR 6 months after NKX019



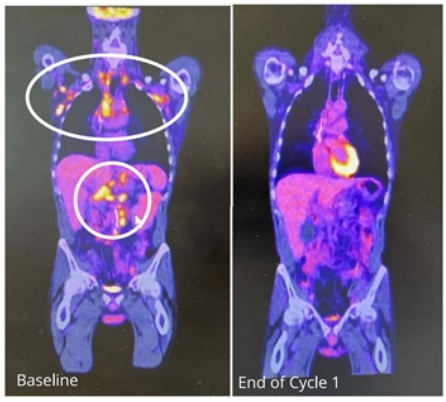


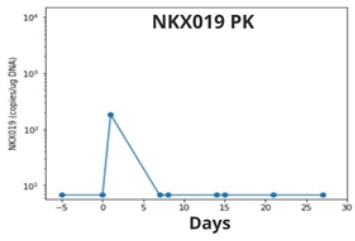
Patient Profile
- 53-year-old male with extensive DLBCL
- Relapsed after R-EPOCH and R-ICE

Efficacy
- **CR after 1 cycle of 1B cells x 3**

Safety
- ≥ Grade 3 AEs-lymphocyte, neutrophil, WBC count decreased

Follow-up
- Completed consolidation cycle and remains in CR 3 months after NKX019





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Based on interim data from open clinical database as of 21 Apr 2022

NKX019 shows compelling preliminary activity and safety in NHL with the potential to address multiple unmet needs

- No DLTs or cases of CRS, GvHD or neurotoxicity
- 5 of 6 patients responded (83% ORR) and 3 of 6 patients achieved complete response (50% CR) in NHL at 1B cells × 3 dose level
  - Complete responses observed in multiple NHL histologies including DLBCL
- Durability of at least 5 months with one patient at lowest dose of 300M cells x 3
- Next steps
  - Potential to improve and deepen responses with higher dose of 1.5B cells x 3
  - Planned expansion cohorts in both CAR T treated and CAR T naïve LBCL
  - Potential combination studies in expansion cohorts
  - Next data update 2H 2022

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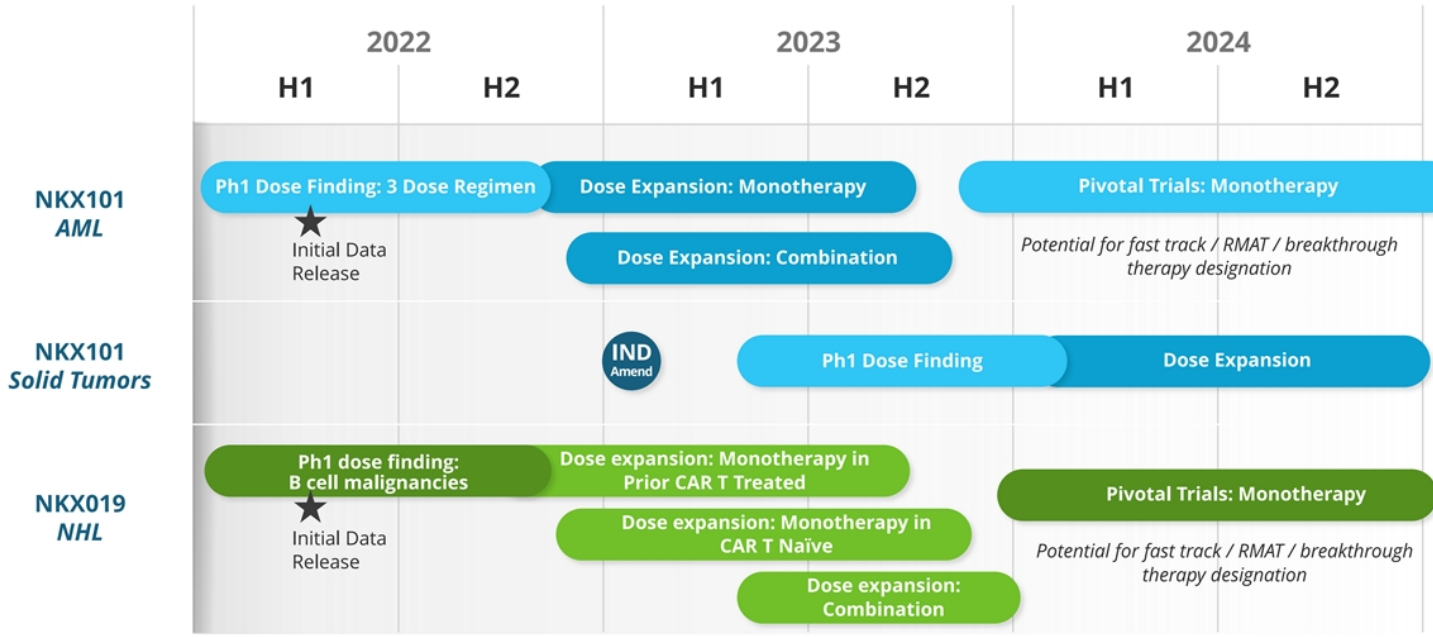
Based on interim data from open clinical database as of 21 Apr 2022

Potential upcoming milestones for clinical programs



Emerging clinical data from both NKX101 and NKX019 programs validate the Nkarta platform

- ✓ Promising preliminary activity with favorable safety profiles
- ✓ Allogeneic and off-the-shelf therapies available on demand
- ✓ Potential to pursue accelerated regulatory pathway options, earlier line combination regimens for both programs
- ✓ Significant progress toward fulfilling the mission to:

  Discover, develop and deliver novel off-the-shelf NK cell therapy product candidates that have a profound impact on cancer patients

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