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): June 27, 2023

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: (925) 407-1049

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 June 27, 2023, Nkarta, Inc. (the "Company") issued a press release announcing positive updated clinical data from its Phase 1 study of NKX101, 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 June 27, 2023 and as previously disclosed, the Company hosted a conference call to discuss the foregoing updated clinical 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 June 27, 2023, the Company announced updated clinical data from its ongoing Phase 1 study of NKX101 to treat patients with relapsed or refractory ("r/r") acute myeloid leukemia ("AML"), including data from dose escalation and a dose expansion cohort in which patients received lymphodepletion consisting of fludarabine and cyclophosphamide ("Flu/Cy") prior to NKX101 and from a dose expansion cohort in which patients received modified lymphodepletion consisting of fludarabine and cytarabine ("Flu/Ara-C") prior to NKX101. The updated clinical data demonstrate that NKX101 was well-tolerated across all dose levels and both lymphodepletion regimens. No dose-limiting toxicities were observed. Myelosuppression and infection, which are common in this patient population following lymphodepletion, were the most common higher-grade adverse events experienced by the thirty patients with r/r AML that received Flu/Cy lymphodepletion, as well as by the six patients that received Flu/Ara-C lymphodepletion. The clinical data also demonstrate that NKX101 had antileukemic activity in patients with r/r AML that received Flu/Ara-C lymphodepletion, the majority of which had high-risk disease. In the dose expansion cohort in which patients received Flu/Ara-C lymphodepletion, a cycle of treatment consisted of Flu/Ara-C lymphodepletion followed by three weekly doses of NKX101 at 1.5 billion cells per dose. Four out of six patients in that dose expansion cohort achieved either a complete response with hematologic recovery ("CR") or a complete response with residual thrombocytopenia ("CRi") after receiving at least one cycle of NKX101 (67% CR/CRi rate), and three out of the six patients achieved a complete response with hematologic recovery (50% CR rate). Out of the eighteen patients with r/r AML that received standard lymphodepletion of Flu/Cy and the highest doses of NKX101 (3 weekly doses at 1 billion or 1.5 billion cells per dose) in either a dose escalation or dose expansion cohort, four patients achieved CR/CRi (22% CR/CRi rate) and three achieved a complete response with hematologic recovery (17% CR rate). The expansion cohort incorporating Flu/Ara-C lymphodepletion remains open for enrollment in the NKX101 Phase 1 clinical trial.

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 June 27, 2023.
99.2	Clinical Program Update Presentation, dated June 27, 2023.
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: June 27, 2023

By: /s/ Alicia Hager

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

Exhibit 99.1

Nkarta Updates Clinical Progress of CAR-NK Cell Therapy NKX101 for Patients with Relapsed or Refractory Acute Myeloid Leukemia

- Encouraging antileukemic activity seen with NKX101 in patients with AML, including several with high-risk features, using a modified lymphodepletion incorporating Ara-C (cytarabine)
- In patients with r/r AML treated with a three-dose regimen of NKX101 at 1.5 billion cells per dose after fludarabine/Ara-C for lymphodepletion, n=6
  - 4 of 6 patients achieved complete response (67% CR/CRi, 50% CR rate)
  - 2 CRs with MRD negativity
  - 1 patient deepened response to MRD negative CRi with additional cycles
- NKX101 was well tolerated across dose-levels and lymphodepletion regimens
- Expansion cohort incorporating Ara-C based lymphodepletion expected to be the basis of NKX101 development moving forward
- Updated clinical data from NKX101 program expected in 1H 2024
- Conference call scheduled for today, June 27, at 8:00 a.m. ET

SOUTH SAN FRANCISCO, Calif., June 27, 2023 -- Nkarta, Inc. (Nasdaq: NKTX), a biopharmaceutical company developing engineered natural killer (NK) cell therapies, today announced positive updated data from its Phase 1 study of NKX101 to treat patients with relapsed or refractory (r/r) acute myeloid leukemia (AML). NKX101 is an allogeneic, off-the-shelf cell therapy candidate comprising NK cells derived from healthy donors and engineered to target NKG2D ligands on cancer cells.

Four of six patients in one dose expansion cohort achieved a best composite complete response (67% CR/CRi rate) after receiving at least one cycle of NKX101. In this cohort, a cycle consisted of three weekly doses of NKX101 at 1.5 billion cells per dose after treatment with fludarabine (Flu) and Ara-C (cytarabine) for lymphodepletion. Ara-C is an established and important drug in the treatment of AML across treatment lines, including first line therapy. Exposure to Ara-C is also known to upregulate NKG2D ligands, potentially increasing sensitivity of cancerous cells to NK-cell mediated killing. Data from the NKX101 study suggest Ara-C has the potential to be an effective agent for lymphodepletion.

“Patients with relapsed or refractory AML have few treatment options, and novel approaches are urgently needed. Traditional chemotherapy is often unable to drive deep remissions in this setting, and many patients cannot tolerate it,” said Carlos Bachier, M.D., Medical Director of

Research and Cellular Therapy, Sarah Cannon Transplant & Cellular Therapy Program at Methodist Hospital in San Antonio, Texas. “NKX101 following lymphodepletion with fludarabine and Ara-C had encouraging anti-tumor activity in a small number of patients with difficult to treat relapsed/refractory AML. This activity, together with its tolerable safety profile, merits further study of NKX101.”

“NK cell therapy has long held promise for patients with AML, and these latest results highlight our continued progress towards delivering on that promise with NKX101,” said David R. Shook, M.D., Nkarta’s Chief Medical Officer. “While these data are early and in a small number of patients, the response rate exceeds the rate observed with even the latest approved agents and highlights the potential advantages of lymphodepletion using Flu/Ara-C.”

Nkarta expects to enroll 12 to 20 additional patients in the expansion cohort using Flu/Ara-C lymphodepletion of the Phase 1 clinical trial and provide a clinical update in the first half of 2024. Nkarta also plans to introduce protocol changes intended to standardize criteria for retreatment and consolidation and simplify study logistics for enrolled patients.

Evaluating NKX101 in r/r acute myeloid leukemia
NKX101 is an allogeneic, cryopreserved, off-the-shelf cancer immunotherapy candidate that uses donor-derived 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 cellular therapy in patients with r/r AML. As of June 10, 2023, a total of 36 patients with r/r AML were enrolled, compared to 17 at the previous update of April 21, 2022.

Thirty patients with r/r AML were treated with NKX101 after lymphodepletion with fludarabine and cyclophosphamide (Flu/Cy), through dose finding and a separate dose expansion cohort. The majority (17/30, 57%) of patients had poor risk disease. The patients in these cohorts were heavily pre-treated, with 2 median lines of therapy (range 1-12) and 27/30 (90%) having been treated with venetoclax.

A separate, expansion cohort enrolled 6 patients who received lymphodepletion with Flu/Ara-C followed by 3 weekly doses of NKX101 at 1.5 billion cells per dose. This cohort included 5/6 (83%) patients with poor risk disease and other additional high-risk clinical features such as early relapse after allogeneic hematopoietic cell transplant (HCT) and chemo-refractory disease. The patients in this cohort were also heavily pre-treated, with 2 median lines of therapy (range 1-3) and all having been previously treated with venetoclax-containing regimens. Today’s announcement is the first time that results from the Flu/Ara-C cohort are being presented.

Safety in NKX101
NKX101 was well tolerated. No dose-limiting toxicities were observed across all cohorts. The safety profile of NKX101 was consistent across both lymphodepletion regimens. The emerging safety profile of NKX101 is positively differentiated from those of many cell therapies.

In patients with r/r AML that received lymphodepletion with Flu/Cy (Table 1), limited CAR T-like toxicities were observed, including 5 (12%) ≤grade 2 infusion reactions, 5 (12%) cases of ≤grade 2 cytokine release syndrome (CRS), 1 case of grade 2 immune effector cell-associated neurotoxicity syndrome (ICANS), and no graft-versus-host disease (GvHD). The most common higher-grade adverse events were myelosuppression - a condition resulting in fewer red blood cells, white blood cells and platelets, as well as infection, which are common in this patient population post lymphodepletion.

Safety Table 1 – Patients treated with fludarabine / cyclophosphamide lymphodepletion

Grade 3+ AEs in ≥10% of patients	**Total (n=30)**
Hematologic Events	
Thrombocytopenia	18 (60%)
Anemia	16 (53%)
Neutropenia	13 (43%)
Febrile neutropenia	8 (27%)
White blood cell count decreased	5 (17%)
Leukocytosis	4 (13%)
Infections	
Pneumonia	3 (10%)
Other	
Hypoxia^	4 (13%)
Fatigue	3 (10%)
Hypotension	3 (10%)

Treatment emergent adverse events regardless of relationship based on interim data from open clinical database as of 10 June 2023

^ In the setting of febrile neutropenia/pneumonia

In patients with r/r AML in the expansion cohort using Flu/Ara-C lymphodepletion (Table 2), there were no observations of CRS, ICANS or GvHD of any grade. Myelosuppression and infection remained the most common higher-grade adverse events. However, there were no >grade 3 infections, and no treatment-associated fatalities.

Safety Table 2 – Patients treated with fludarabine / Ara-C lymphodepletion

Grade 3+ AEs in >1 patient	**Total (n=6)**
Hematologic Events	
Anemia	3 (50%)
Febrile neutropenia	3 (50%)

Neutropenia	3 (50%)
Thrombocytopenia	2 (33%)
Lymphocyte count decreased	2 (33%)
WBC decreased	2 (33%)
Infections	
Sepsis	3 (50%)

Clinical Activity in NKX101
In patients with r/r AML that received Flu/Ara-C lymphodepletion, 4 of 6 achieved CR/CRi (67% CR/CRi rate) and 3 of 6 achieved a complete response with hematologic recovery (50% CR rate). Two of the 4 reported complete responses were MRD (measurable 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. One patient with MRD positive CR underwent allogeneic HCT and remains in CR at 4 months. Another patient with CR has no detectable disease by flow cytometry and additional MRD testing is pending. Flu and Ara-C are often combined with other chemotherapies, such as idarubicin and mitoxantrone in r/r AML, and such combinations (e.g. FLAG-Ida) have been used as a part of comparator arms in multiple registrational studies, with CR rates between 10-12%.

In patients with r/r AML that received Flu/Cy lymphodepletion, and the highest doses of NKX101 (3 weekly doses at 1 billion or 1.5 billion cells per dose), 4 of 18 achieved CR/CRi (22% CR/CRi rate) and 3 of 18 achieved a complete response with hematologic recovery CR (17% CR rate). There were no CRs at the lower doses of NKX101.

Conference Call Information
Nkarta management will discuss the NKX101 results on Tuesday, June 27, 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 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 a 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, please visit ClinicalTrials.gov.

About the NKX101 Trial
This Phase 1 clinical trial evaluates the safety and anti-tumor activity of NKX101 as a multi-dose, multi-cycle cellular therapy following lymphodepletion in patients with r/r AML. 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 either fludarabine / cyclophosphamide lymphodepletion or fludarabine /Ara-C lymphodepletion followed by NKX101. 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 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.

About Nkarta
Nkarta is a clinical-stage biotechnology company advancing the development of allogeneic, off-the-shelf natural killer (NK) cell therapies. 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, tolerability and safety profile of NKX101; plans and timelines for the availability and presentation of NKX101 clinical data; plans and timelines for the continued and future clinical development and commercial potential of NKX101; and the potential advantages of using fludarabine/cytarabine (Ara-C) as lymphodepletion for NKX101. 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.

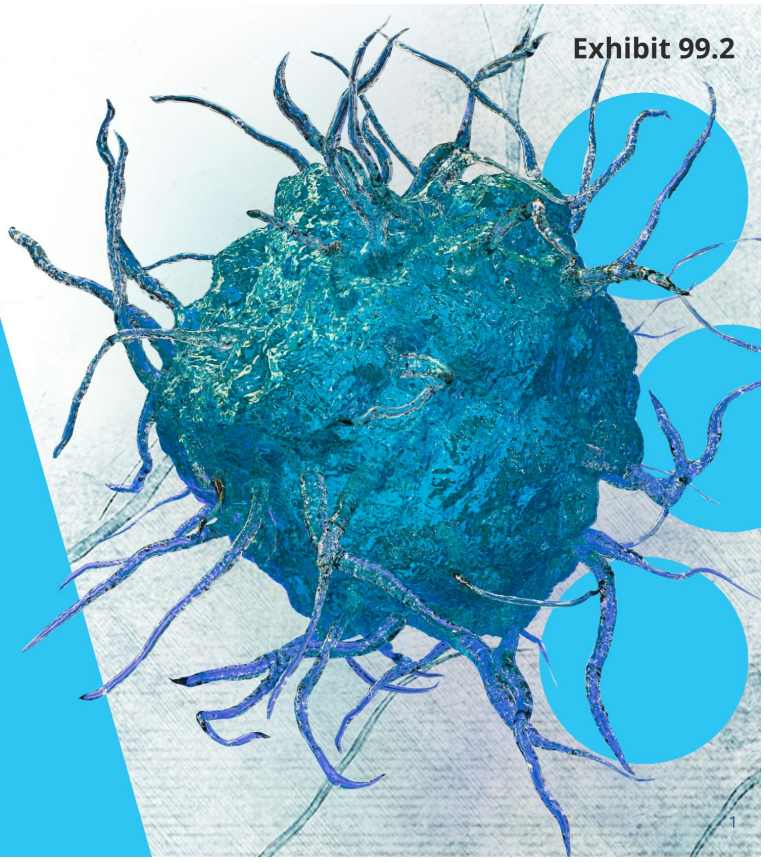
These and other risks and uncertainties are described more fully in Nkarta's filings with the Securities and Exchange Commission ("SEC"), including the "Risk Factors" section of Nkarta's Quarterly Report on Form 10-Q for the quarter ended March 30, 2023, filed with the SEC on May 11, 2023, and Nkarta's 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

Clinical Program Update: NKX101 for Relapsed or Refractory AML

27 June 2023



Clinical Data as of 10 Jun 2023

nkarta

Forward looking statements

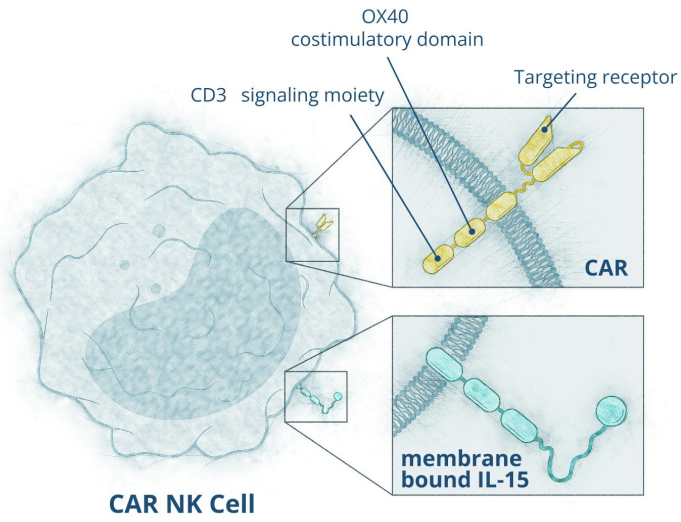
This presentation contains forward - looking statements, within the meaning of the Private Securities Litigation Reform Act of 1995, regarding future events and the future results of the company that are based on current expectations, estimates, forecasts, and projections about the industry in which 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.

CAR NK cells driving a revolution in off-the-shelf cell therapy

- Next generation platform built for:
  - **Blood cancers and solid tumors**
  - **Allogeneic, off-the-shelf, and on demand**
  - **Industrialized manufacturing**
  - **Outpatient administration**



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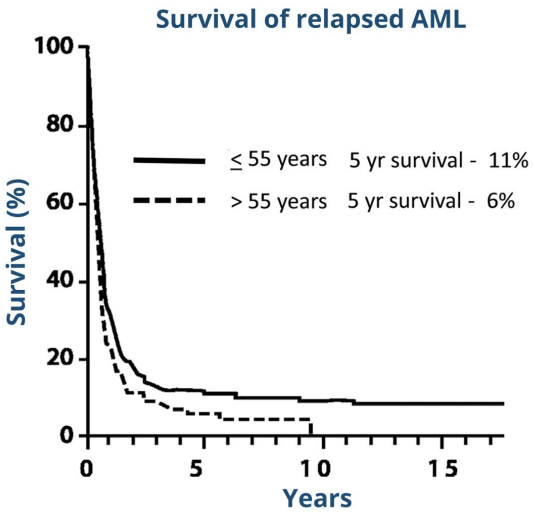
AML is a rapidly progressing leukemia with a poor prognosis

- **Heterogenous group of blood cancers treated with risk-adapted chemotherapy**
  - Most patients will ultimately die from relapse or complications from therapy
- **Outcomes for patients with relapsed or refractory disease are especially poor**
  - Low response rates with standard chemotherapy
  - 12-18% CR rate, including venetoclax-based regimens
- **Allogeneic HCT is best chance of long-term cure**
  - Limited to patients who are fit
  - Pre-transplant CR improves outcomes



Bewersdorf, J, et al. *Haematologica.* 2020.105(11), 2659.
Perl, et al *N Engl J Med.* 2019 Oct 31;381(18):1728-1740.
Roboz, et al *J Clin Oncol.* 2014 Jun 20;32(18):1919-26.
Rowe, et al *Blood.* 2010 116 (17).

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AML, acute myeloid leukemia; CR, complete response; HCT, hematopoietic cell transplantation

Biomarkers have driven development of recent AML therapies

- **CAR T cell therapy for AML has been limited by lack of appropriate antigens**
- **Most recent approvals have been targeted therapies using genetic biomarkers**
- **Response rates are limited, even among those few with targetable mutations**

Biomarker	FLT3	IDH1	IDH2
Prevalence in AML	~30%	6-10%	9-13%
Approved targeted therapy	gilteritinib	ivosidenib	enasidenib
CR rate	21%	22%	19%
Estimated CR rate in total AML population	**6%**	**1-2%**	**2-3%**

Mardiana, et al. *Front Oncol*. 2020 May 6;10:69.
Perl, et al *N Engl J Med*. 2019 Oct 31;381(18):1728-1740.
DiNardo, et al. *N Engl J Med* 2018; 378:2386-2398.
Stein, et al. *Blood*. 2017 Aug 10;130(6):722-731.

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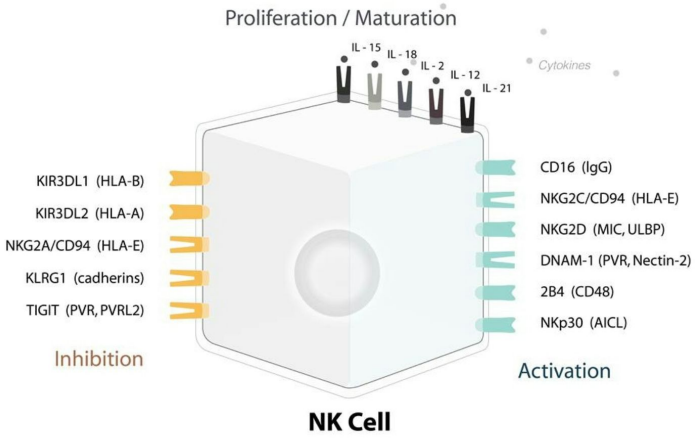
AML, acute myeloid leukemia; CR, complete response; CAR, chimeric antigen receptor.

NK cells have potential for antigen-independent therapy

- **NK cells kill malignant cells through a balance of signals**
  - No need for prior antigen exposure
  - No GVHD due to lack of T-cell receptor
- **NK cell therapy without HCT has been explored in AML for almost 20 years**
  - Well tolerated with limited CRS or ICANS in non-transplant setting
  - CR rate <20% with haploidentical NK cells



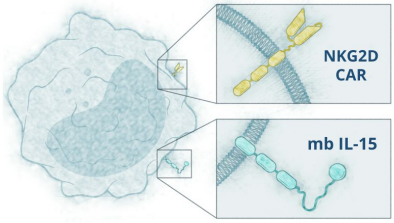
AML, acute myeloid leukemia; CR, complete response; CRS, cytokine release syndrome; HCT, hematopoietic cell transplantation; GVHD, graft-versus-host disease; ICANS, immune effector cell-associated neurotoxicity syndrome; NK cells, natural killer cells

Imai, et al. *Blood*. 2005 Jul 1;106(1):376-83.
Bachier, et al. *Blood*. 2020. 136, Supp 1. 42-43.

Flu/Cy

NKX101 lymphodepletion with fludarabine/cyclophosphamide

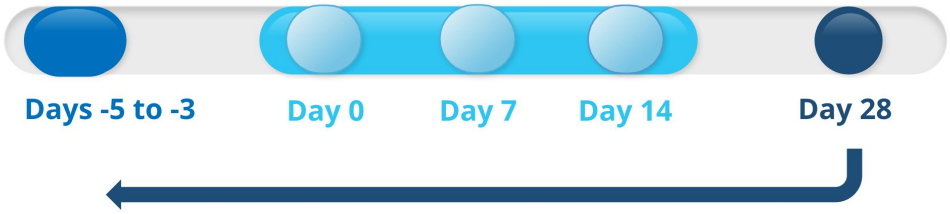
- **High-risk pre-treated patient population**
  - r/r AML ≥1 therapy
  - Must have received approved targeted therapy
  - Pre- and post-BMT



Lymphodepletion
- Cyclophosphamide
- Fludarabine

NKX101 multi-dosing cycle
- 2-3 doses of CAR-NK per cycle

Efficacy assessment
- Based on standard criteria



Additional cycles to potentially deepen response

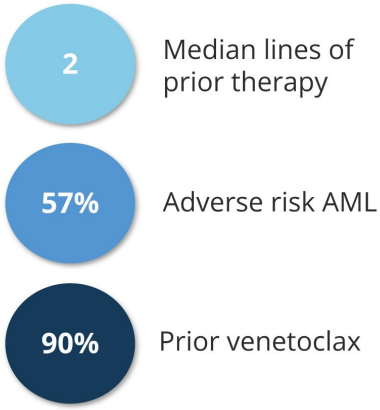
nkarta

NCT04623944

Flu/Cy

NKX101 patients were multiply-relapsed with poor prognosis

Characteristics	Total (N=30)
Age, median (range)	65 (22 - 81)
Baseline ECOG, n (%)	
0-1	26 (87%)
2	3 (10%)
Baseline marrow blast %, median (range)	18.5 (1 - 85)
AML Risk Category, n (%)	
Favorable	4 (13%)
Intermediate	7 (23%)
Poor/adverse	17 (57%)
Median prior lines of therapy (range)	**2 (1 - 12)**
Prior allogeneic transplant, n (%)	5 (17%)
Prior venetoclax, n (%)	27 (90%)
Prior fludarabine, n (%)	6 (20%)



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

Based on interim data from open clinical database as of 10 June 2023

Flu/Cy

NKX101 with Flu/Cy LD was well-tolerated across dose levels

- **No DLTs through 1.5B cells/dose**
- **Myelosuppression and infection consistent with LD and underlying disease were the most common higher-grade toxicities**
- **Limited CAR T-like toxicities**
  - 5 (12%) had infusion reactions, all grade 1/2
  - 5 (12%) patients had CRS, all grade 1/2
  - 1 grade 2 ICANS (Cycle 2)
  - No graft-versus-host disease

Grade 3+ AEs* in ≥10% of patients	Total (n=30)
Hematologic Events	
Thrombocytopenia	18 (60%)
Anemia	16 (53%)
Neutropenia	13 (43%)
Febrile neutropenia	8 (27%)
White blood cell count decreased	5 (17%)
Leukocytosis	4 (13%)
Infections	
Pneumonia	3 (10%)
Other	
Hypoxia ^	4 (13%)
Fatigue	3 (10%)
Hypotension	3 (10%)

** Treatment emergent adverse events regardless of relationship*
^ In the setting of febrile neutropenia/pneumonia

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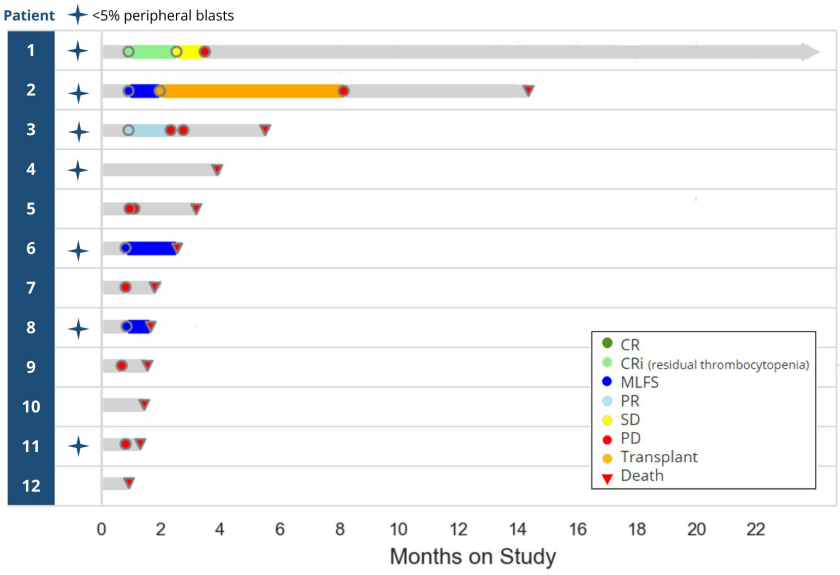
CRS, cytokine release syndrome; DLT, dose limiting toxicity; ICANS, Immune Effector Cell-Associated Neurotoxicity Syndrome; LD, lymphodepletion

Based on interim data from open clinical database as of 10 June 2023

Response to NKX101 after Flu/Cy lymphodepletion – Early cohorts



- **Previously presented patients with AML treated in cohorts prior to 1B cells/dose x 3**
  - 100M / 300M x 3 doses
  - 150M / 1.5B x 2 doses
- **Response appeared more consistent in those patients with <5% blasts in blood**
  - Marrow blasts: 3-40%
  - ~50% of patients with r/r AML

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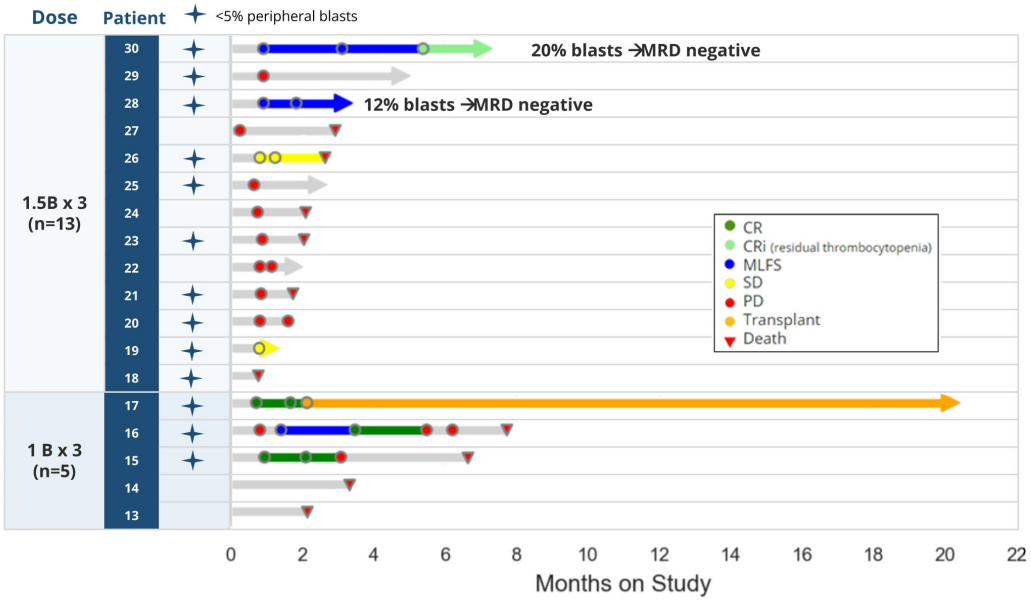
CNS, central nervous system; CR, complete response; CRi, CR with residual thrombocytopenia; HCT: hematopoietic stem cell transplant; MRD, minimal residual disease; MLFS, morphological leukemia-free state; PD, progressive disease; PR, partial response; SD, stable disease.

Koschade, et al. Ann Hematol. 2022 Aug;101(8):1703-1710.

Based on interim data from open clinical database as of 24 June 2023

Flu/Cy

Response to NKX101 after Flu/Cy lymphodepletion (≥1B/dose x 3)



- **13 additional patients with AML**
  - 12 at 1.5 B x 3 cell dose
  - 1 at 1 B x 3 cell dose*
- **4/18 (22%) CR/CR$_i$ rate**
  - 3 previously reported CR,
  - 1 new CR$_i$ (MRD negative)
- **Consolidation with HCT has maintained long-term CR**

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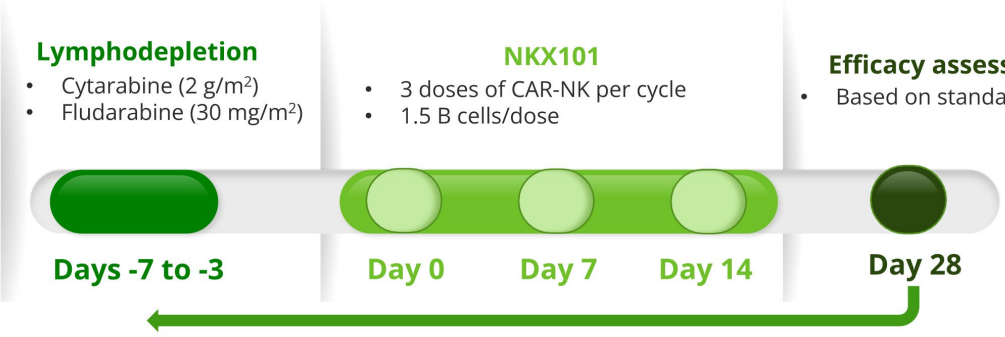
CR, complete response; CRi, CR with residual thrombocytopenia; LD, lymphodepletion; MRD, minimal residual disease; MLFS, morphological leukemia-free state; PD, progressive disease; PR, partial response; SD, stable disease.
Based on interim data from open clinical database as of 24 June 2023

** Patient was previously reported as diagnosed with MDS in Apr 2022 update*

NKX101 lymphodepletion with Ara-C

- **Fludarabine/Ara-C with anthracycline (e.g. FLAG-Ida) is a frequent salvage regimen for r/r AML with true CR rate of ~10% and cCR rate of ~20% as a comparator arm**
  - Anthracyclines (idarubicin, mitoxantrone, etc) add toxicity and limit addressable population
- **Ara-C (cytarabine) is a DNA damaging agent with potent immunosuppressive effects**
  - Incorporated across AML treatment landscape, including upfront therapy
- **Exposure upregulates NKG2D ligands, increasing sensitivity to NK killing *in vivo***

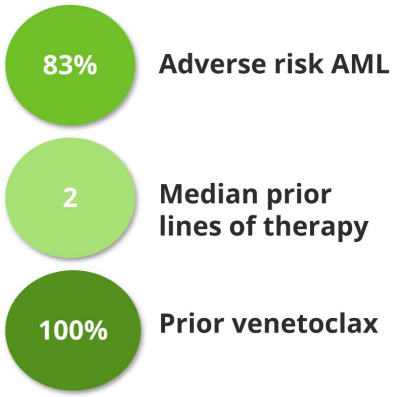


Roboz, et al *J Clin Oncol.* 2014 Jun 20;32(18):1919-26.
Perl, et al *N Engl J Med.* 2019 Oct 31;381(18):1728-1740.
Holubova, et al. *Int J Mol Sci*. 2019 Jul 15;20(14):3472.
Ogbomo, et al. *Neoplasia*. 2008 Dec; 10(12): 1402–1410.
Cytarabine USPI

CR: complete response; cCR, cumulative CR rate; FLAG-Ida: fludarabine, cytarabine +/- GCSF and idarubicin; NK: natural killer; NKG2D: natural killer group 2, member D

Demographics for Flu/Ara-C lymphodepletion cohort

Characteristics	Total (N = 6)
Age, median (range)	61.5 (27 - 70)
Baseline ECOG, n (%)	
0-1	5 (83%)
2	1 (17%)
Baseline blast %, median (range)	
Marrow	35 (20 - 86)
Peripheral blood	19 (8-79)
AML Risk Category, n (%)	
Intermediate	1 (17%)
Poor/adverse	5 (83%)
Median prior lines of therapy (range)	**2 (1 - 3)**
Prior venetoclax, n (%)	6 (100%)
Prior cytarabine, n (%)	3 (50%)



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AML: acute myeloid leukemia; ANC, absolute neutrophil count; ECOG, Eastern Cooperative Oncology Group.

Based on interim data from open clinical database as of 10 June 2023

Manageable safety profile for Flu/Ara-C lymphodepletion cohort

- **No DLTs (all 1.5B cells/dose)**
- **Myelosuppression and infection were the most common higher-grade toxicities and consistent with LD and underlying disease**
- **No Grade >3 infections**
- **No CAR T-like toxicities**
  - No CRS of any grade
  - No ICANS/neurotoxicity
  - No graft-versus-host disease

Grade 3+ AEs in >1 subject	Total (n=6)
Hematologic Events	
Anemia	3 (50%)
Febrile neutropenia	3 (50%)
Neutropenia	3 (50%)
Thrombocytopenia	2 (33%)
Lymphocyte count decreased	2 (33%)
WBC decreased	2 (33%)
Infections	
Sepsis	3 (50%)

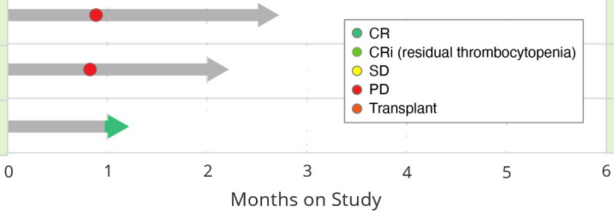
DLT, dose limiting toxicity; LD, lymphodepletion; CAR, chimeric antigen receptor; CRS, cytokine release syndrome; ICANS, Immune Effector Cell- Associated Neurotoxicity Syndrome; AE, adverse event; WBC, white blood count.

Based on interim data from open clinical database as of 10 June 2023

Flu/Ara-C

Deep disease control with NKX101 with Flu/Ara-C lymphodepletion

Patient	Patient Info	Marrow Blast	NKX101 Response
1	70 yo ♂ TP53 AML relapse <6 mo post HCT	30%	**CR (MRD negative)** after cycle 1 Consolidated with cycle 2, remains in CR
2	50 yo ♂ WT1 AML relapse <6 mo post HCT	30%	**CRi (MRD negative)** after 3 cycles Response deepened with each of cycle
3	27 yo ♂ AML refractory to 7+3, HiDAC, FLT3 inh	86%	**CR (MRD 0.18%)** after 1 cycle Taken to allogeneic HCT, remains in CR
4	70 yo ♂ AML refractory to ven/aza, CD123 ADC	40%	Progressive disease
5	63 yo ♀ AML, refractory to dauno/Ara-C, dec/ven	79%	Progressive disease
6	60 yo ♀ AML unfit, refractory to dec/ven	20%	**CR, flow negative (MRD pending)** after 1 cycle



- **Deep responses in patients with high-risk clinical features**
  - Early relapse post-HCT
  - Chemo-refractory disease
  - Medically unfit

- **4/6 (67%) CR/CRi rate**
- **3/6 (50%) CR rate**

Bejanyan, et al *Biol Blood Marrow Transplant. 2015 Mar;21(3):454-9.*
Stone, et al. *Leuk Res. 2019 Jul;82:36-42.*

Based on interim data from open clinical database as of 24 June 2023

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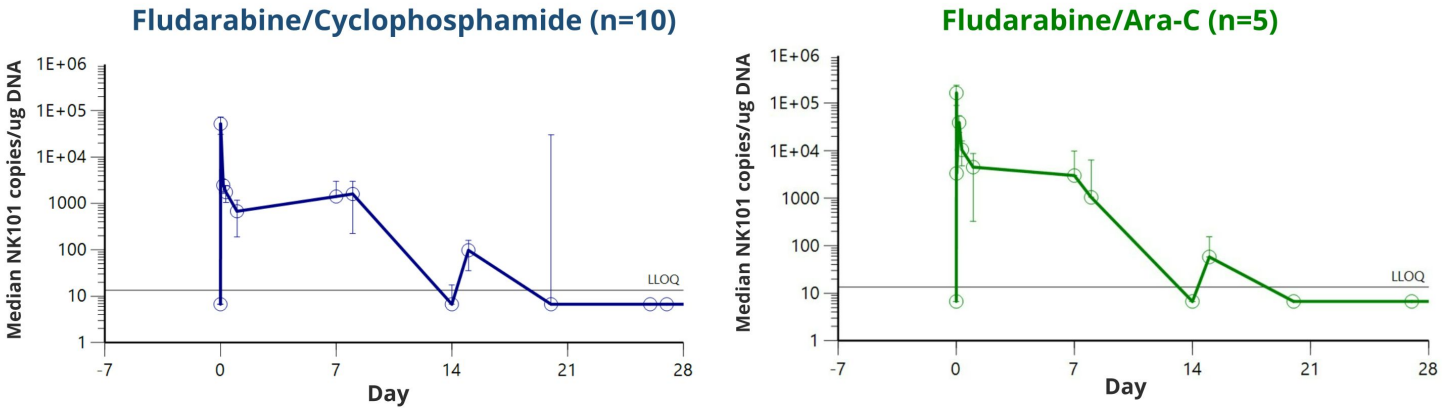
7+3: Cytarabine + anthracycline; HiDAC: high dose Ara-C; dec: decitabine; ven: venetoclax.

Ara-C can replace cyclophosphamide without compromising PK



NKX101 dosed on days 0, 7, and 14

- **Exposure consistent with previously published data using haploidentical NK cells**
- **No need for exogenous IL-2 or other cytokine support**

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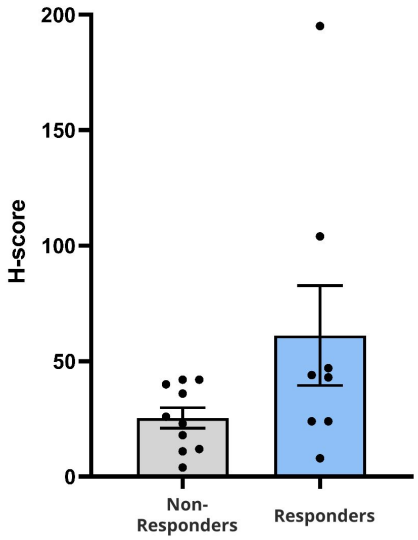
Romee, et al. *Sci Transl Med*. 2016 Sep 21; 8(357)

NKG2D ligands consistently detected in patient bone marrow samples

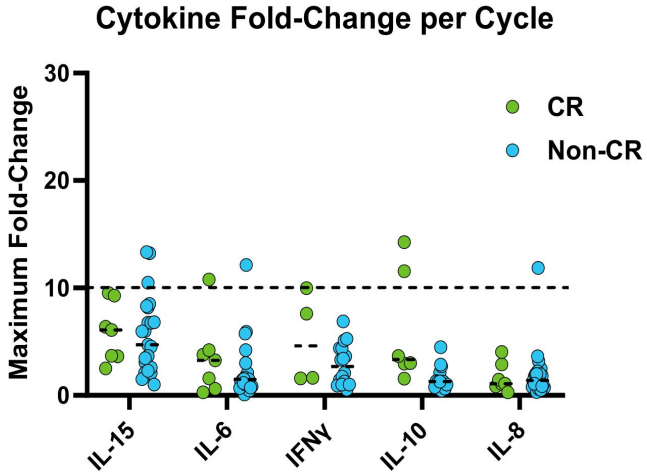
- **Ligand staining via IHC performed on baseline bone marrow samples prior to lymphodepletion and NKX101**
  - MICA/B and ULBP 1/3
  - H-score combines % positive cells and intensity of expression
- **Ligand expression trends higher among responders at higher doses (≥1B)**

All patients at 1B dose and over



Cytokine elevation is modest and not required for clinical response

- **Cytokine levels were measured in patients throughout treatment**
  - Elevation of IL-15, IL-6, IFNγ, IL-10, and IL-8 are all associated with inflammation & CRS
  - Peak levels were only marginally above baseline for most patients
- **Severe CAR T-cell associated CRS can be associated with ~100-fold increases of these pro-inflammatory cytokines**
- **No association was observed between elevated serum cytokines and response to NKX101**



Morris, et al *Nat Rev Immunol*. 2022 Feb;22(2):85-96.
Maude, et al. *Cancer J*. 2014 Mar-Apr; 20(2): 119–122.

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Summary and Next Steps

- **Relapsed/refractory AML is a heterogenous disease with limited therapeutic options**
  - Response rates to traditional chemotherapy remain unacceptably low
  - Approved targeted therapies provide an option for limited number of patients
- **Incorporating Ara-C into NKX101 lymphodepletion provides encouraging antileukemic activity (67% CR/CR_i rate) although follow-up is limited**
  - Cytokines remain low throughout treatment with NKX101, differentiating from CAR T cell therapies
  - Safety profile and pharmacokinetics facilitate moving into earlier lines of therapy with standard of care treatment
- **Next update planned for 1H24**
  - Clinical amendment pending to include consolidation and retreatment
  - Additional enrollment planned in fludarabine / Ara-C cohort