

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): March 25, 2024

Nkarta, Inc.

(Exact name of Registrant as Specified in Its Charter)

Delaware
(State or Other Jurisdiction
of Incorporation)

001-39370

(Commission File Number)

47-4515206
(IRS Employer
Identification No.)

1150 Veterans Boulevard
South San Francisco, CA
(Address of Principal Executive Offices)

94080
(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 Other Events.

On March 25, 2024, Nkarta, Inc. (the "Company") made available a presentation announcing updated clinical data in relation to 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 presentation is attached hereto as Exhibit 99.1 and incorporated by reference herein.

The information in Item 7.01 of this Current Report on Form 8-K (including Exhibit 99.1) 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 March 25, 2024, the Company shared data relating to B cell reconstitution after treatment with NKX019. Among patients with various B-cell malignancies who were treated in the Company's previously announced Phase 1 clinical study of NKX019 in non-Hodgkin lymphoma ("NHL"), circulating CD19 positive cells were rapidly depleted from the blood after treatment with NKX019. After depletion, the B-cell repertoire of all patients who remained in remission and for whom testing was performed (n=5) recovered with a predominance of naïve, non-class-switched isotypes at 3 months post treatment, as evaluated by sequencing of the B-cell receptors. No patient had received prior CAR T therapy. This recovery of a naïve B-cell population was confirmed by single-cell RNA profiling, whereby the recovering B cells had an RNA transcriptome profile of naïve B cells and intermediate B cells. This is consistent with the CD19 CAR T experience, where patients with autoimmune diseases had a decrease in mature class-switched isotypes and similar recovery of predominantly naïve B cells after treatment. B cells undergo class switching after activation and exposure to signaling molecules, and, in patients with systemic lupus erythematosus, this class switching is required to generate autoreactive antibodies.

In addition, the Company also shared preliminary pharmacokinetic ("PK") data comparing two lymphodepletion ("LD") regimens in the NKX019 Phase 1 clinical study in patients with NHL: (1) fludarabine ("Flu") and cyclophosphamide ("Cy") together ("Flu/Cy") and (2) Cy alone. Two patients who received successive cycles of NKX019 following LD for treatment of diffuse large B-cell lymphoma utilizing a compressed dosing regimen of NKX019 had similar PK exposure, regardless of LD regimen used, including similar peak exposure. Both patients received the first cycle of NKX019 following Flu/Cy LD and the second cycle after LD with Cy alone and are the only patients treated using this approach with available PK data at the time of this filing.

Forward-Looking Statements

This Current Report on Form 8-K contains statements regarding matters that are not historical facts are "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, as amended. Words such as "anticipates," "believes," "expects," "intends," "plans," "potential," "projects," "would," and "future" or similar expressions are intended to identify forward-looking statements. Examples of these forward-looking statements include, but are not limited to, the Company's expected cash runway; the Company's position, plans, strategies, and timelines for the continued and future clinical development and commercial potential of NKX019; the therapeutic potential, accessibility, tolerability, and safety profile of NK cell therapies, including NKX019 for the treatment of autoimmune diseases, such as lupus nephritis; and plans and timelines for the future availability and presentation of NKX019 clinical data.

Item 9.01 Financial Statements and Exhibits.**(d) Exhibits.**

Exhibit Number	Description
99.1	Corporate Presentation, dated March 2024.
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: March 25, 2024

By:

/s/ Alicia Hager

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

nkarta

ENGINEERING

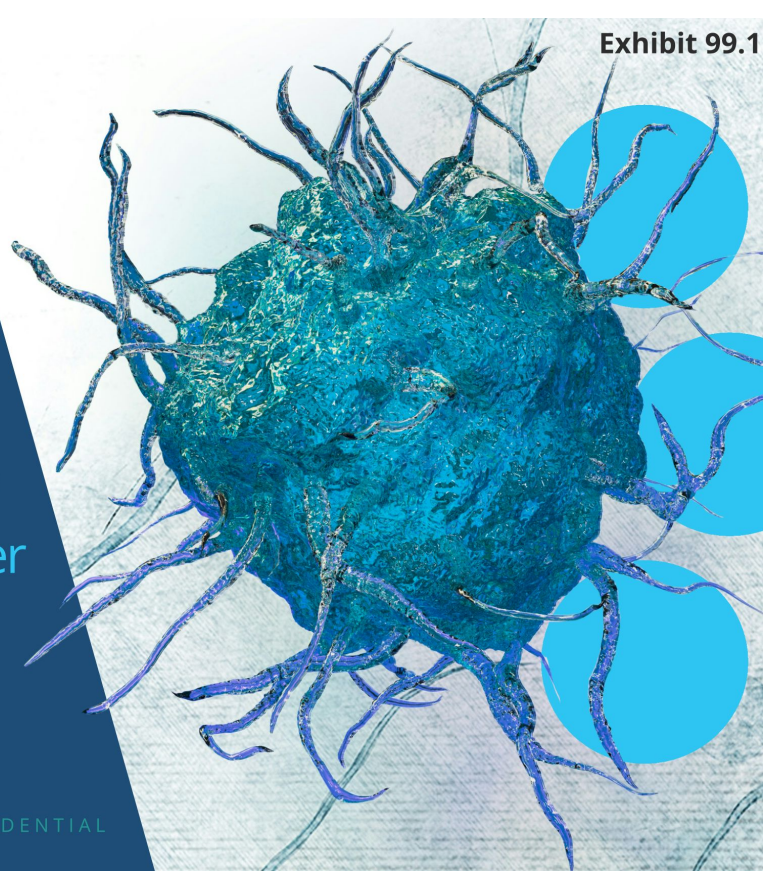
Natural Killer Cells

for next generation treatment of
autoimmune diseases and cancer

ON DEMAND

March 2024

CONFIDENTIAL



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 programs are 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.

No Offer or Solicitation

This presentation is for informational purpose only and does not constitute an offer or solicitation for the sale or purchase of the securities, assets or business described herein or a commitment of the company with respect to any of the foregoing, and this presentation shall not form the basis of any contract. There shall be no sale of securities in any jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such jurisdiction.

This presentation contains selected proprietary and confidential information of the company. The disclosure of the contents of this presentation to any person without the prior consent of the company is prohibited. Each recipient agrees to be bound by the foregoing limitations and conditions and, in particular, will be deemed to have represented, warranted and undertaken that such recipient has read and agreed to comply with the contents of this disclaimer including, without limitation, the obligation to maintain the confidentiality of this presentation and all information that is contained in this presentation and not already in the public domain.

Delivering the future of cell therapy by harnessing the killing ability of natural killer (NK) cells

Fully allogeneic from healthy, pre-screened donors

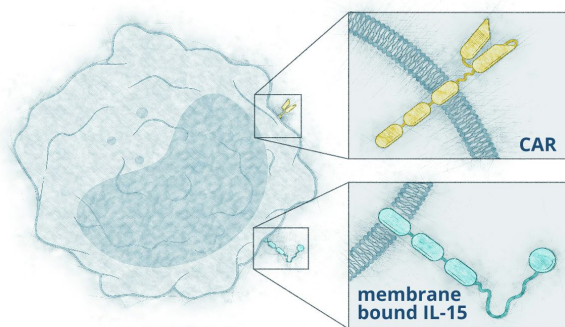
On-demand, off-the-shelf availability for outpatient administration

Programs in autoimmune disease and oncology

Clinical program updates expected in 2024

Projected cash runway into 2026

nkarta





CAR NK Cell

CARs engineered for optimal target cell killing

Candidates engineered with a targeting CAR and membrane bound IL-15

Pipeline with transformational potential

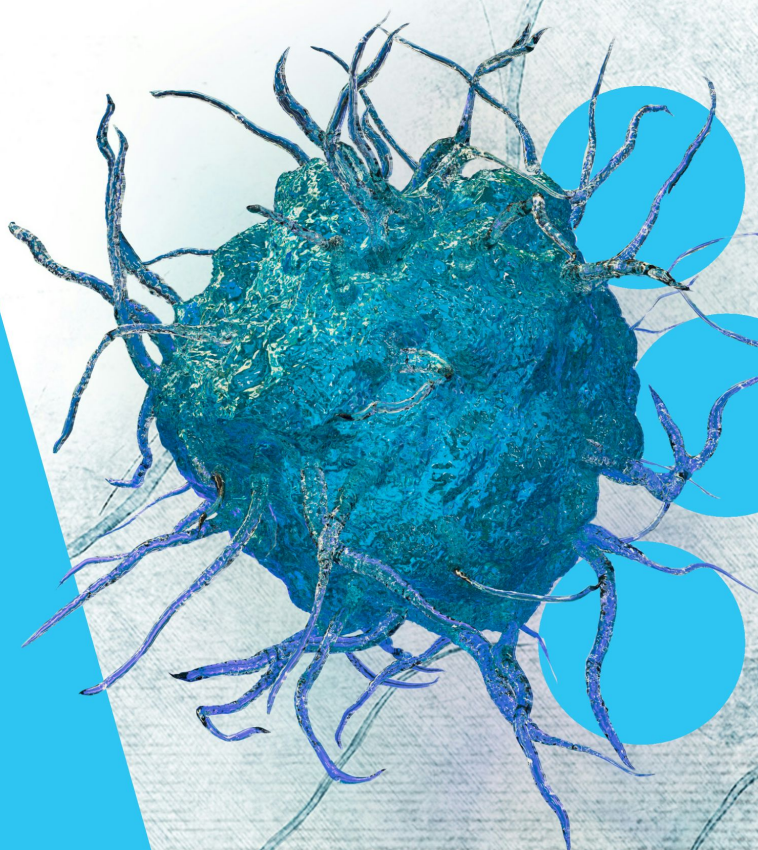
Program (Target)	Indication	Research	IND-Enabling	Clinical	Status
NKX019 (CD19)	Refractory LN	○ — ○ — ○	○ — ○ — ○	○	IND cleared 4Q 2023 First patient dosing expected 1H 2024
NKX019 (CD19)	r/r NHL	○ — ○ — ○	○ — ○ — ○	○	Phase 1 dose-compression cohort ongoing Update planned mid 2024
NKX101 (NKG2D)	r/r AML	○ — ○ — ○	○ — ○ — ○	○	Phase 1 follow-up ongoing Patient enrollment closed
NKX101 (NKG2D)	Solid Tumors	○ — ○	○		Gated on proof of concept in r/r AML
NKX070 (CD70)	Heme & Solid Tumors	○ →			Collaboration 
NK + T (Undisclosed)	Undisclosed	○ →			Collaboration 

Autoimmune
 Oncology

AML: acute myeloid leukemia; LN: lupus nephritis; NHL: non-Hodgkin lymphoma; r/r: relapsed or refractory

NKX019 in Autoimmune Disease

nkarta



Cell therapy offers a promise of a disease-modifying option for patients with refractory autoimmune disease

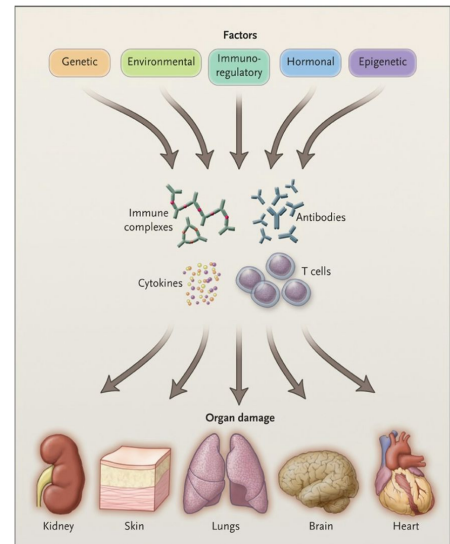
Autoimmune disease is a major unmet need

- Estimated 7 million patients in U.S. with a form of B-cell mediated autoimmune disease¹
- Pathogenic B cells can drive systemic diseases via combination of intrinsic and extrinsic factors

Effectiveness of current therapies is inadequate and often consists of lifelong immune suppression

CD19-directed cell therapy has challenged the treatment paradigm for autoimmune diseases

- Drug-free remissions after a single treatment in academic trials²



Tsokos, *N Engl J Med* 2011; 365:2110-2121.

1: Canaccord Genuity, 14 Nov 2023.

2: Mackensen et al. *Nature Med.* 28 Oct 22. 2124-2132.

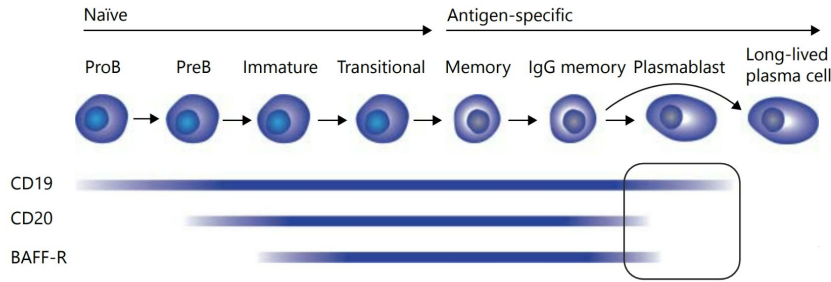
Both target and therapeutic modality likely contribute to benefits of anti-CD19 cell therapy versus antibody approaches to targeting B cells

Benefit of CD19-directed CAR T in SLE may be via elimination of autoantibody-producing cells

- CD19^{high} CD20^{dim/neg} BAFF-R^{dim/neg} plasmablasts
- CD19^{dim/neg} CD20^{neg} BAFF-R^{neg} long-lived plasma cells

Current agents that target B cells have inconsistent benefit in SLE

- Rituximab (CD20 antibody)
- Belimumab (BAFF-R antibody)



von Büdingen, et al. *Eur Neurol* 2015. 73:238-246.

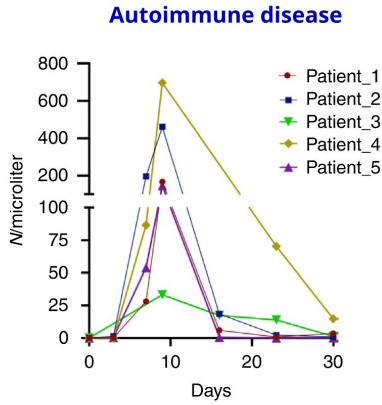
CONFIDENTIAL

CAR T cell kinetics in autoimmune disease differ greatly from that in oncology

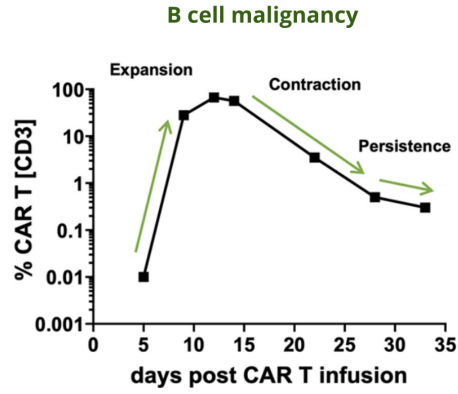
Transient persistence is followed by rapid elimination in **autoimmune disease**

- Expansion peaks at ~10 days
- Less antigen burden may explain differences in persistence and exposure

In **B cell malignancies**, CAR T cells persist long after antigen-dependent expansion



Mackensen et al. *Nature Med.* 28 Oct 22. 2124–2132.



Peinelt, et al. *Front. Immunol.* 2022. 13:830773.

Transient B-cell suppression can provide drug-free responses in autoimmune disease

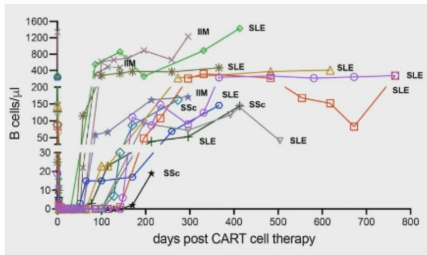
Immune “reset” occurs after B cell suppression in as short as 50 days in autoimmune disease

- Persistent B cell aplasia is NOT required for long-term responses
- Autoantibodies remain negative in most patients and drug-free remissions persist for up to 29 mo¹

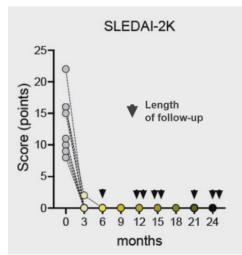
Prolonged B cell aplasia is common in oncology (median ~18 mo²), especially in responders

- Absence of B cells is used as clinical proxy for detection and activity of CAR T cells
- B cell recovery within 3 months of infusion is associated with disease progression

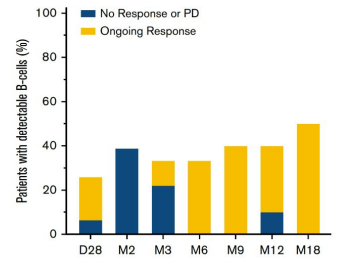
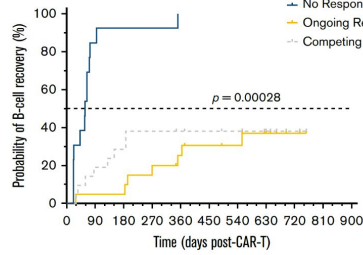
Autoimmune disease



Muller et al. Abstract 220, ASH 2023.



B cell malignancy

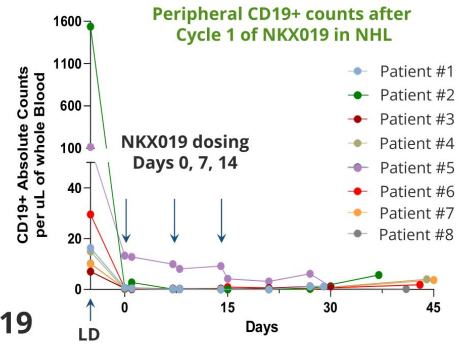


Baird, et al. 2021. *Blood Advances* 5(1):143-155.

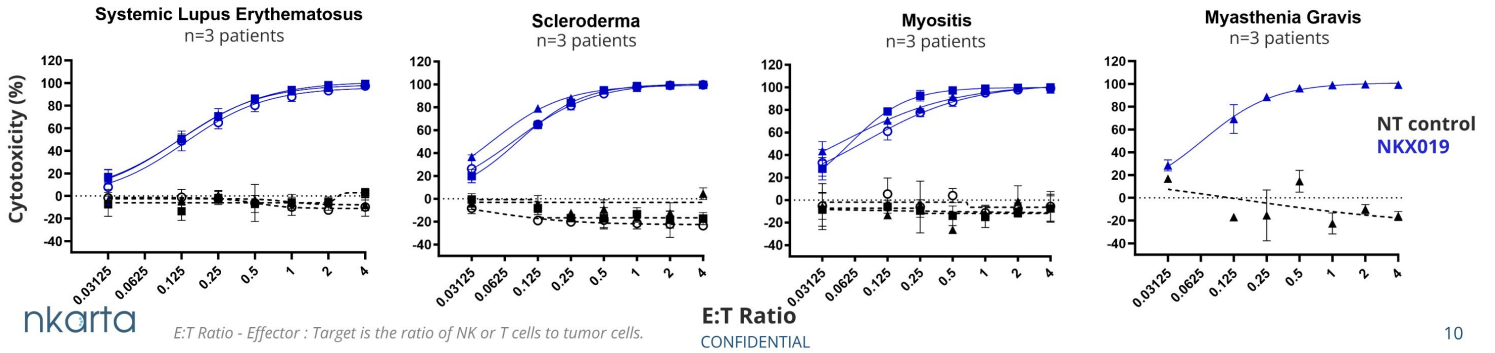
NKX019 targets and kills C19+ cells from patients across indications

Patient samples from ongoing **NHL trial** show effective elimination of CD19+ cells from circulation by NKX019

- Normal and malignant cells cleared with a single cycle
- One cycle includes lymphodepletion and 3 doses of NKX019
- Deep suppression achieved by day 30



In vitro studies using blood from patients with various autoimmune diseases show consistent B cell killing by NKX019



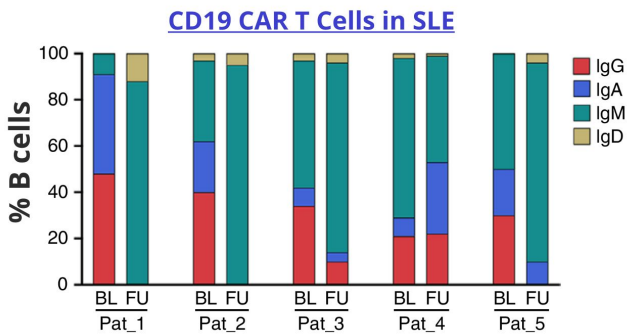
B cells that recover after NKX019 are naïve and non-class switched

Evaluation of B cell receptor (BCR) heavy chains can identify naïve B cell phenotypes

- Naïve B cells express IgM and IgD (non-class switched isotypes)
- After activation, B cells undergo class switching and express IgG and IgA antibodies

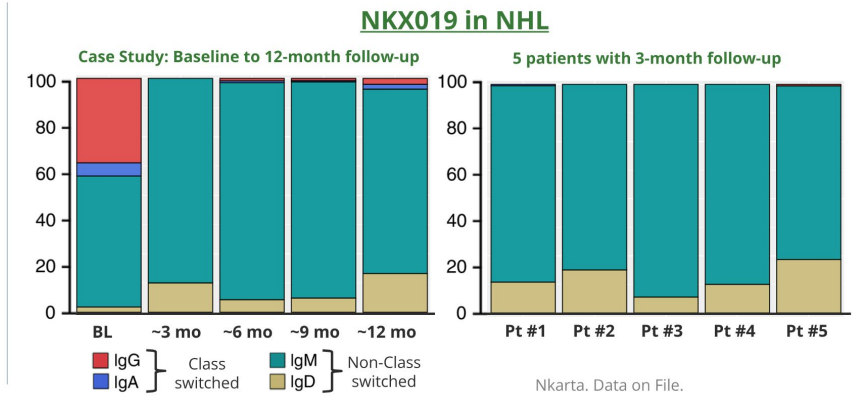
Class switching appears to be required for the generation of autoantibodies in SLE¹

B cell isotype distribution after treatment with NKX019 in NHL trial is comparable to that with CD19 CAR T



Mackensen et al. *Nature Med.* 28 Oct 22. 2124–2132.
BL: baseline; FU: follow-up; SLE: systemic lupus erythematosus

nkarta



Nkarta. Data on File.

1: Liu, et al. *Autoimmunity.* 2004, Sep-Nov 37; (6-7): 431-443.

CONFIDENTIAL

RNA profile confirms naïve B cell predominance after NKX019 treatment

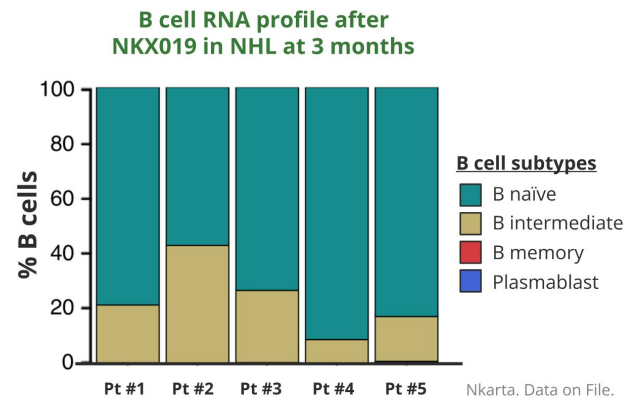
Various B cell subsets have expression profiles identifiable by single cell RNA (sc-RNA)

- Provides additional insight beyond surface expression (e.g. flow cytometry)

Recovery after treatment with NKX019 in NHL trial results in a naïve population

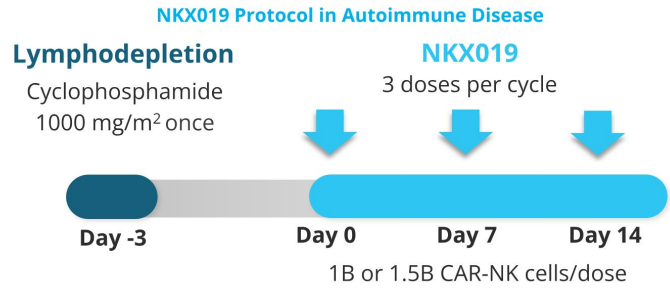
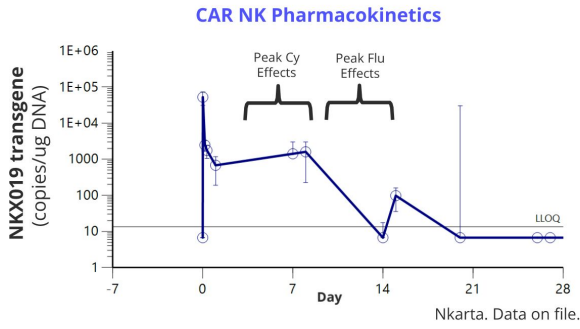
- Naïve B cells and intermediate B cells which are “transitioning” to memory B cells
- Little to no recovery of autoantibody-producing plasmablasts or memory B cells

Comparable to recovery after CD19 CAR T in autoimmune disease



Mackensen et al. *Nature Med.* 28 Oct 22. 2124–2132.

Disease-tailored lymphodepletion with cyclophosphamide alone could provide a critical advantage for patients with autoimmune disease



Early C_{max} of NK cells may lessen need for prolonged suppression provided by fludarabine

- LD is tailored to limit chemotherapy exposure as delayed peak effect offers less benefit for NK cells
- Elimination of fludarabine also lessens risks of cytopenias, infection, and secondary MDS¹

Historical use of single agent Cy at same dosage offers additional benefits

- Same dose is used by rheumatologists for management of autoimmune disease
- Possible regulatory advantage leveraging prior studies and real-world evidence

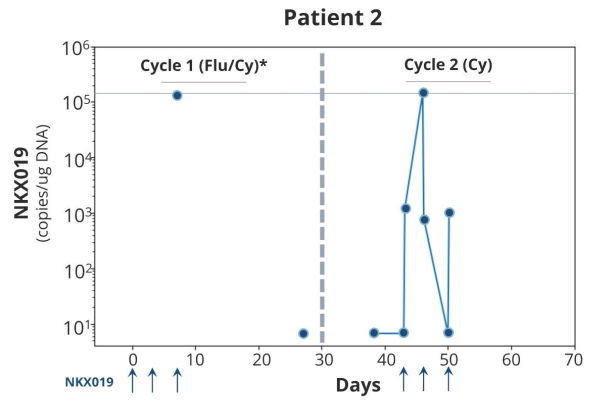
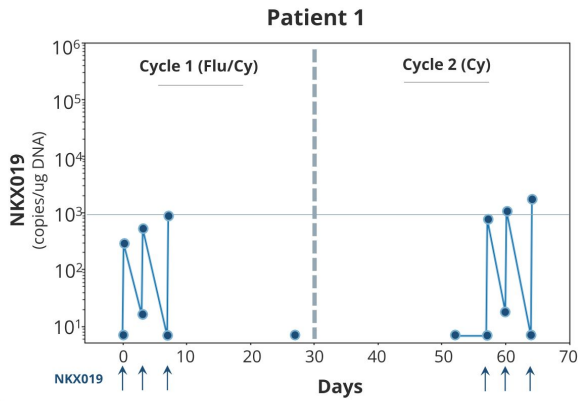
Cy-alone LD results in similar exposure of NKX019

Current trial of NKX019 for NHL allows omission of fludarabine during LD

- Regardless of LD, patients receive NKX019 on Days 0, 3, and 7 following 2 days of rest

Two patients have received subsequent cycles with Cy-only LD after Flu/Cy LD for Cycle #1

- Allows direct comparison of exposure between cycles
- Cy-only LD gives comparable PK to Flu/Cy, including peak exposure



nkarta

LD: lymphodepletion; NHL: non-Hodgkin lymphoma; PK: pharmacokinetics

CONFIDENTIAL

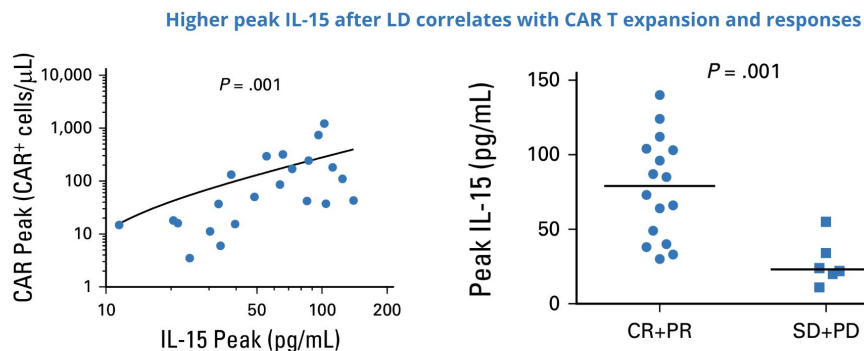
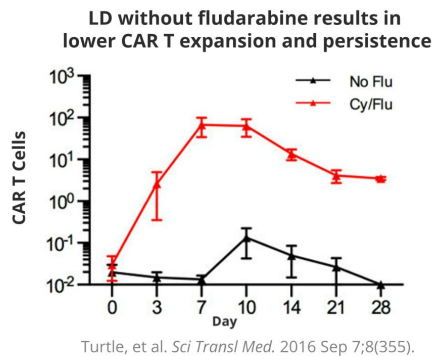
*Multiple PK timepoints missed

Autologous CD19 CAR T cells require fludarabine-containing LD for maximal exposure due to induction of endogenous cytokines, especially IL-15

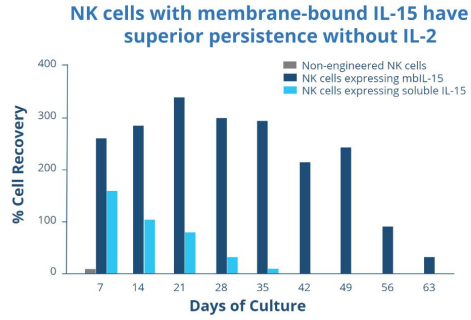
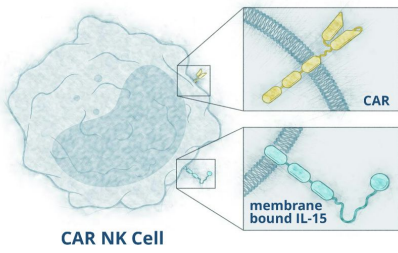
Despite no immune barrier, autologous CAR T cells depend on multi-agent LD for elimination of "cytokine sink" to facilitate expansion

- Fludarabine-sparing LD results in limited CAR T expansion and benefit
- IL-15 levels peak shortly after infusion and correlate with expansion

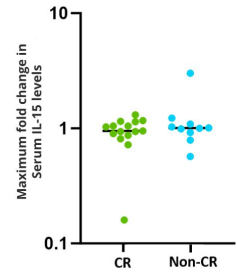
Lower peak IL-15 levels associated with decreased responses in CAR T



NKX019 engineering allows cytokine independence, for both persistence and response, further enabling disease-tailored LD



Serum IL-15 elevation is not required for CR with NKX019 for NHL



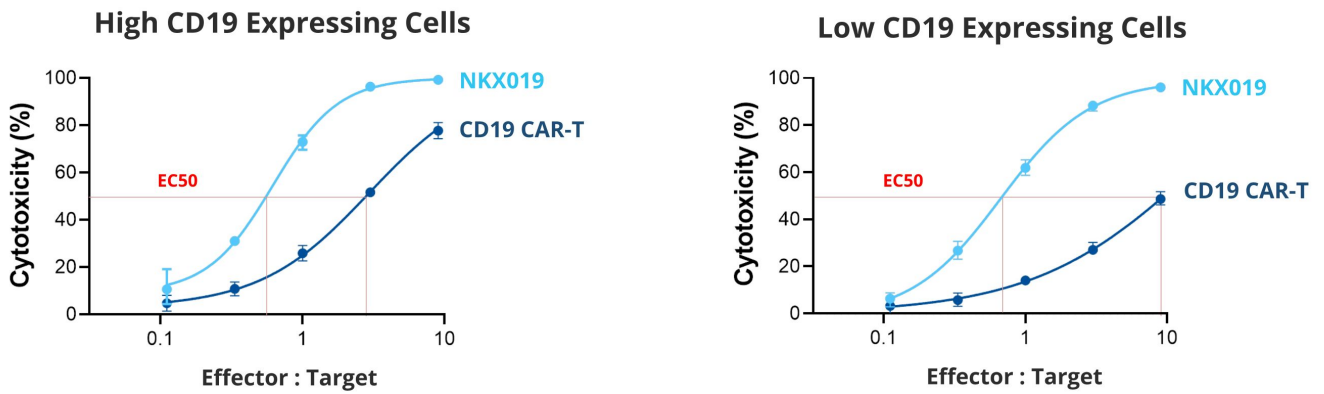
Nkarta, corporate presentation. Dec 2022.

Autocrine stimulation by membrane-bound IL-15 (mbIL-15) provides pro-survival signal

- mb-IL15 allows NKX019 to survive several weeks without supplemental cytokines like IL-15 or IL-2
- Construct causes no secreted IL-15 and has limited cross-cell stimulation

Unlike CD19 CAR T, there is no association between elevated IL-15 after NKX019 and CR in NHL

NKX019 has superior killing of CD19+ cells compared to CAR T, even with low levels of surface expression



**CD19 downregulation allows normal and malignant B cells to escape CAR T cells¹
NKX019 maintains superior killing in B cell tumor cells expressing low CD19 levels²
Potentially allows a deeper B cell immune reset in autoimmune disease**

*Nalm6 cells engineered to express varying levels of CD19 were obtained from R. Majzner, Stanford;
Effector : Target is the ratio of NK or T cells to tumor cells.*

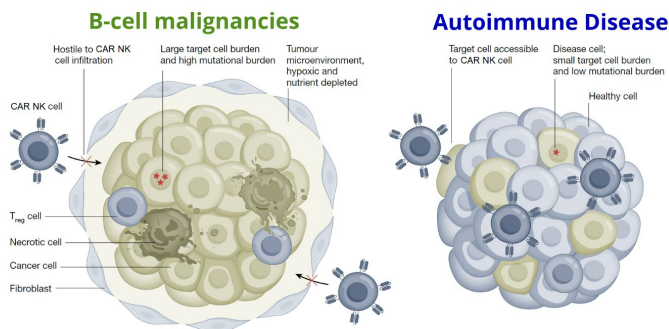
1: Fioretti, et al. Cancer Immunol Immunother. 2023 Jan;72(1):257-264.
2: Dickinson, et al. Blood (2021) 138 (Supplement 1): 3868.

Autoimmune B cells may be more accessible than malignant B cells

While CD19 allows effective targeting of cells of B cell lineage, multiple factors may make B cells in autoimmune disease more accessible to killing

- ❌ Widespread antigen escape via downregulation or loss of CD19 by malignant B cells
- ❌ Tumor microenvironment preventing trafficking and infiltration
- ❌ Large cell burden

Fewer target cells favors NK cell antigen-independent dosing, potentially increasing E:T ratio



Adapted from: Baker, et al. *Nature* 2023 Jul;619(7971):707-715.

NKX019 trafficking facilitates B cell killing throughout the body

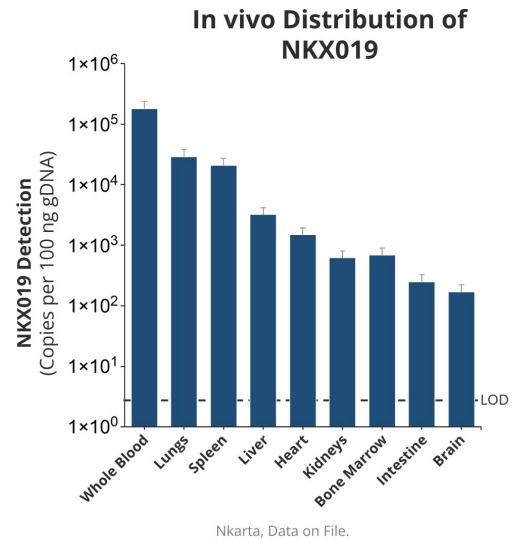
NK cells traffic throughout the body, including to traditionally privileged sites

- Under pathological conditions, including autoimmune diseases, NK cells redistribute between tissues and organs¹

NKX019 distributes broadly in animal models

Patients with B-cell malignancies have achieved CR with NKX019 despite widespread disease

- NHL cleared from bone marrow, lymph nodes, liver, spleen, etc
- Malignant B cells offer effective proxy for biodistribution of normal B cells



CD19 CAR NK cells may be ideally suited for autoimmune disease

NK cells reach peak activity at infusion for rapid target activity

- Maximal immediate effect without *in vivo* expansion
- T cells require expansion and necessitate a different LD approach

Allogeneic NK cells are cleared by host immunity

- Low risk of prolonged B-cell aplasia which is not required for response
- Long-lived CAR T cells have FDA-issued risk of T-cell malignancy¹

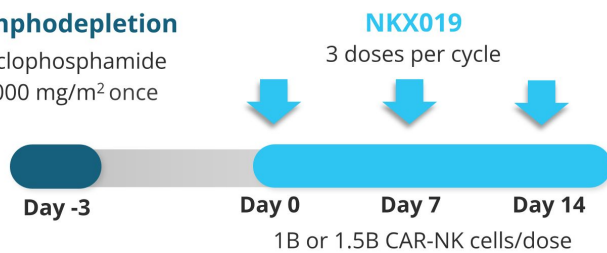
Superior safety and accessibility in non-malignant setting

- On-demand availability without need for cumbersome infrastructure at treatment centers
- Low risk of expansion-related toxicities including CRS and ICANS

NKX019 for autoimmune diseases: A multicenter, open-label, phase 1 study

Lymphodepletion

Cyclophosphamide
1000 mg/m² once



Endpoints:

- Safety and tolerability
- Pharmacokinetics
- Renal function
- Autoantibody serology

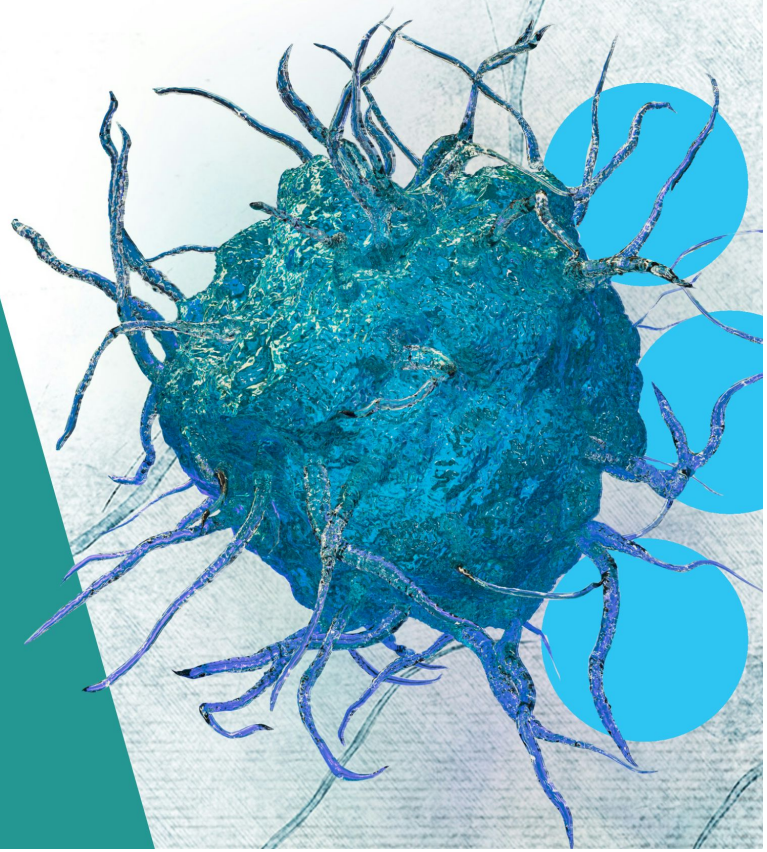
Off the shelf administration
reduces burden to patients and providers

First patient dosing expected 1H 2024

Opportunity to investigate broader
applicability of NKX019 in
multiple autoimmune diseases

NKX019 in Oncology

nkarta



Autologous CAR T-cell therapy has set the bar for cellular therapies in r/r NHL but has limitations

CAR T-cell therapy is not broadly accessible

- Only 20-30% of patients with LBCL who could benefit from CAR T receive it
- Patients often need to change providers and receive bridging chemotherapy

Potential toxicity requires proximity to a specialized inpatient treatment center

- Over 25% of patients require ICU care
- Grade 3+ CRS: 13 to 49%, Grade 3+ ICANS / neurotoxicity: 18 to 31%

Only 30-40% of patients with LBCL treated with CAR T-cell therapy have 6-month CR

- No ability to re-dose for incomplete response
- Outcomes among those that relapse are poor

CAR, chimeric antigen receptor; CR, complete response; CRS, cytokine release syndrome; ICANS, immune effector cell-associated neurotoxicity syndrome; ICU, intensive care unit; LBCL, large B-cell lymphoma; NHL, non-Hodgkin lymphoma.

YESCARTA USPI; KYMRIAH USPI; BREYANZI USPI; Azoulay et al, 2020; Tomas, et al. 2022.

NKX019 for B-cell malignancies: A multicenter, open-label, phase 1 study in r/r NHL

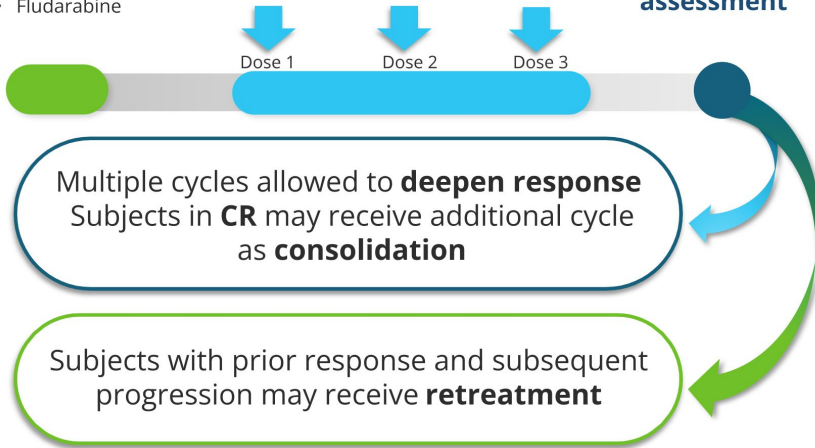
Lymphodepletion

- Cyclophosphamide
- Fludarabine

NKX019

3 doses per 28-day cycle

Efficacy assessment



7 of 10	CR in Phase 1 dose escalation cohort¹
No ICANS, neurotoxicity, or GVHD of any grade and only transient fevers within 24 h of infusion	

4 of 4	CR in retreatment of patients with progression after NKX019
Study amended to increase dose intensity and prevent relapse	

NCT05020678

CAR, chimeric antigen receptor; CR, complete response;; r/r, relapsed/refractory; CRS, cytokine release syndrome; ICANS, immune effector cell-associated neurotoxicity syndrome

1. Dickinson, et al. Oral presentation at EHA 2023, program section s347.

NKX019 Amendment: Compressed Dosing as an Outpatient

Dose compression cohort enrolling patients with large B-cell lymphoma (LBCL), targeting patients who have received *prior CD19 CAR-T cell therapy*

New compressed dosing schedule to intensify exposure to NKX019 in the first week after LD

NKX019 on Days 0, 3, and 7
following standard LD with Flu/Cy

Previous cohorts received NKX019
on Days 0, 7 and 14

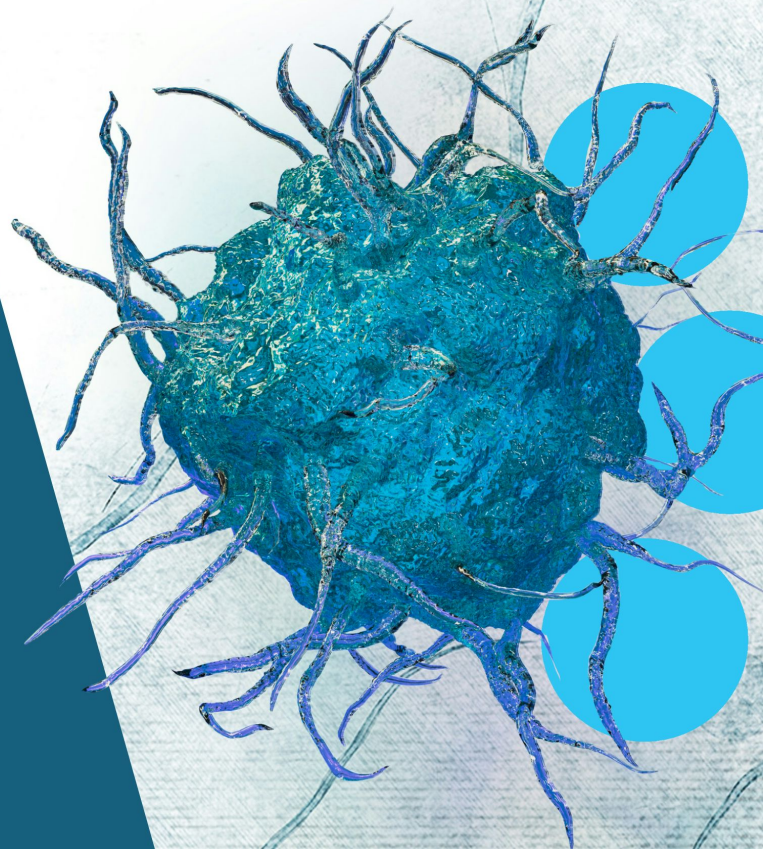
Study amendment also includes

- Potential higher doses of CAR NK cells
- Tailored LD with Cy monotherapy for patients with prolonged cytopenias
- Elimination of inpatient requirement
- Streamlined protocol assessments to reduce burden on sites and patients

Next clinical update planned for mid-2024

Summary

nkarta



Autoimmune expansion | 2024 updates | Cash runway

- Pipeline prioritization focuses on NKX019 development in autoimmune disease

- Disease-tailored lymphodepletion leverages NK cell biology and supports differentiated safety/accessibility profile

- Further investment in NKX019 oncology gated by clinical signals from next data update

- \$250.9 M in cash and cash equivalents as of 31 Dec 2023*; projected cash runway into 2026

Anticipated 2024 clinical milestones in autoimmune

1H 2024

NKX019 in lupus nephritis
Dose first patient and program update

* Includes short-term investments and restricted cash