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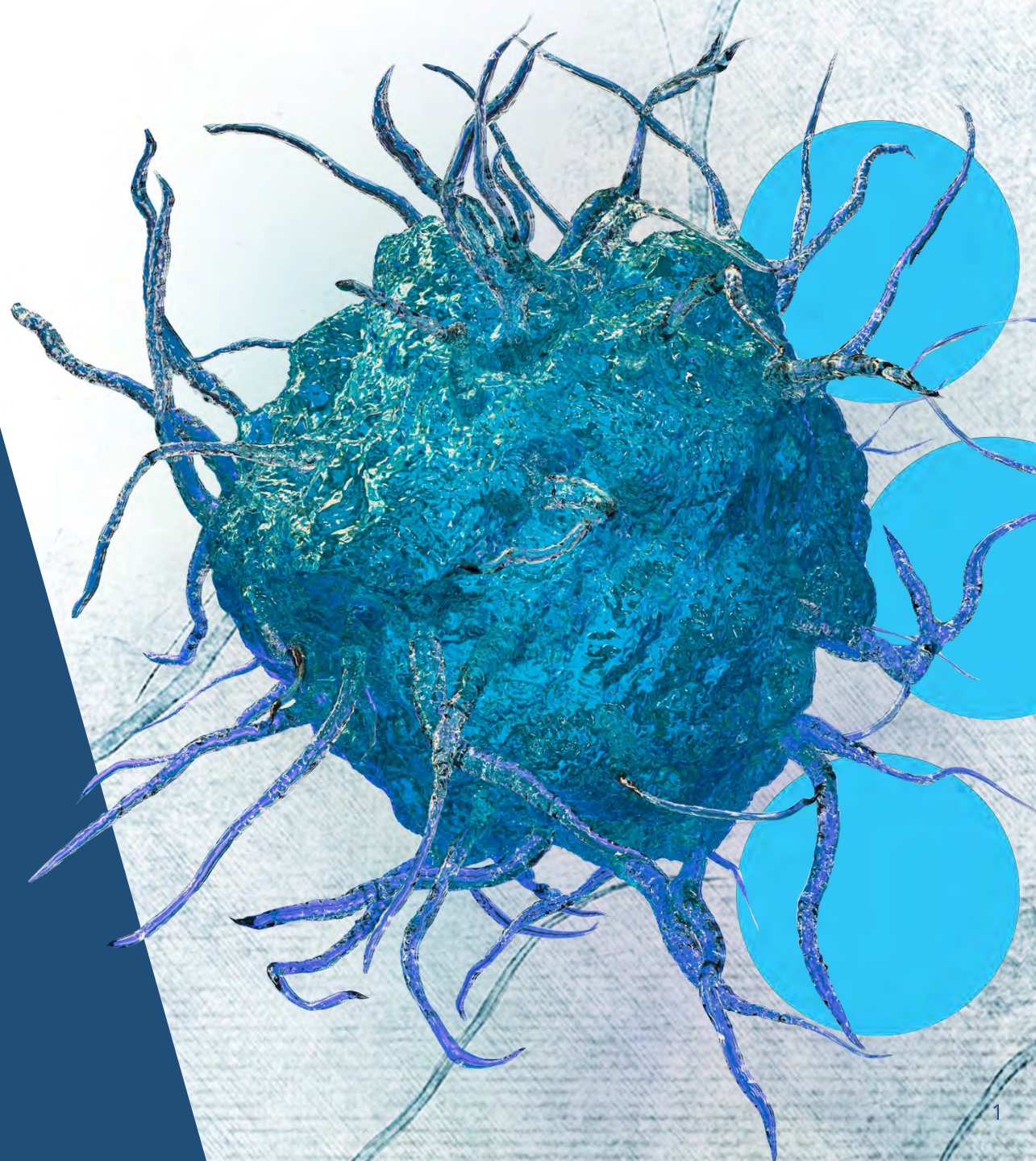
THERAPEUTICS

NEXT GENERATION

Natural Killer Cells

Engineered to Beat Cancer



July 2021

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 quarterly and periodic filings 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.

Pioneering the next revolution in cell therapy

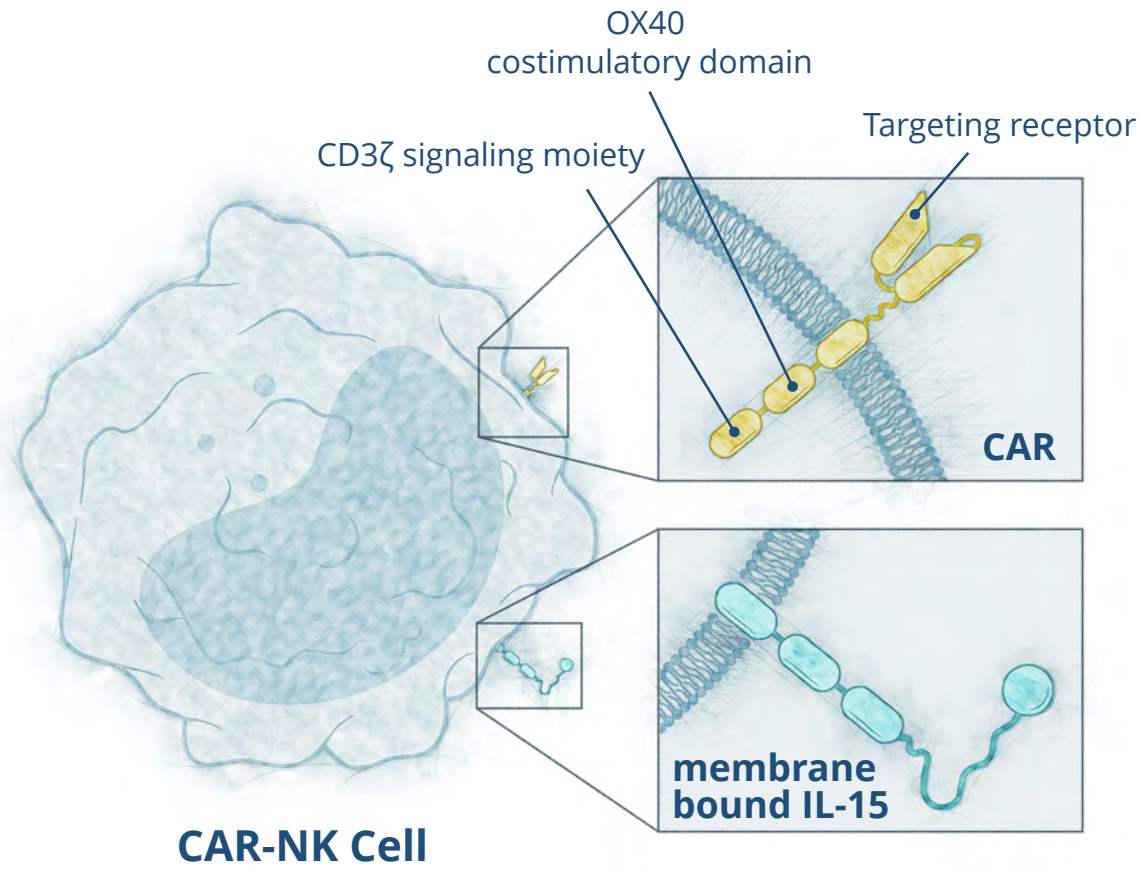
Efficient, robust, next generation NK cell platform built for

- Blood cancers and solid tumors
- Allogeneic and off-the-shelf
- Industrialized manufacturing
- Outpatient administration

CO-LEAD PROGRAMS

NKX101:
Phase 1 ongoing

NKX019:
patient dosing to start 2H 21



CRISPR THERAPEUTICS®

Cell therapy leaders

Complementary expertise

Global Collaboration to Develop Gene Edited Cell Therapies

GENOME ENGINEERING CAPABILITY

Best-in-class, clinically validated CRISPR gene editing

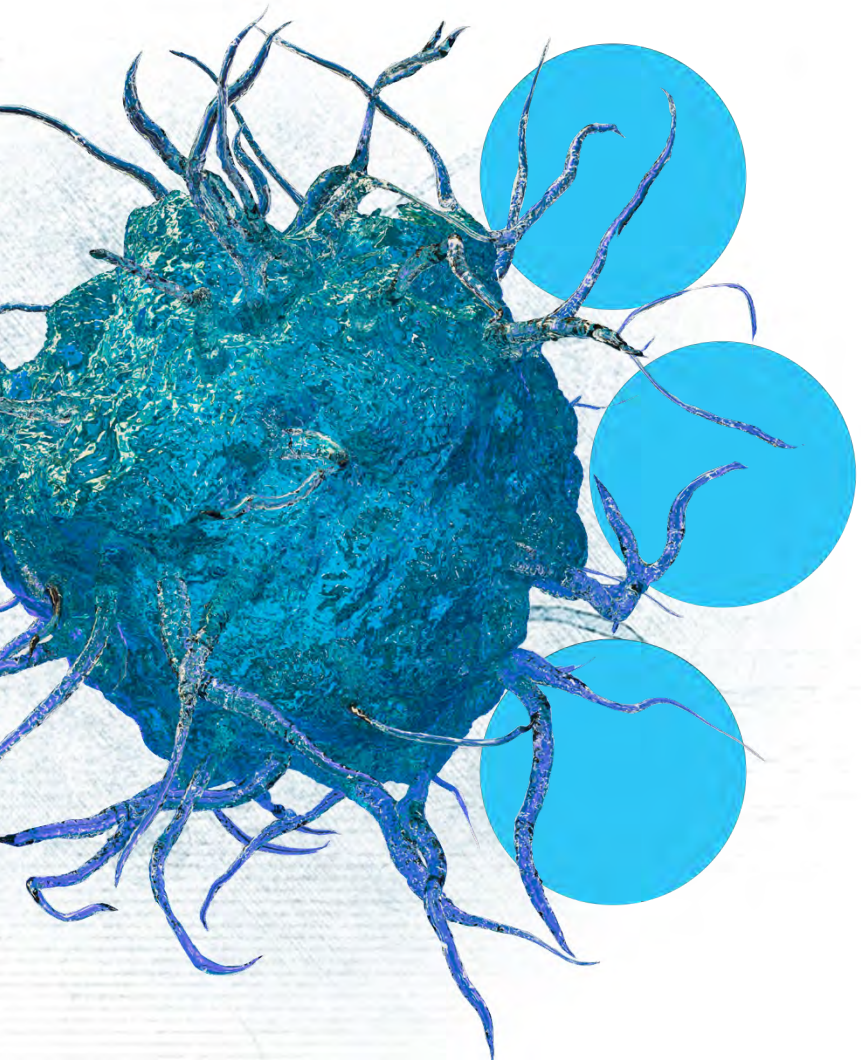
Ability to deploy up to 5 CRISPR/Cas9 gene edits in unlimited number of Nkarta product candidates

EXPERIENCED CLINICAL DEVELOPMENT PARTNER

Co-development and co-commercialization of CD70 CAR NK, CAR NK + CAR T, and option for a third early-pipeline target program

Leverage CD70 and allogeneic T cell expertise of CRISPR Therapeutics

They're called Natural Killer cells for a reason



Because	Therefore
Innate power of NK cells to identify and kill transformed cells	Highly active, cytotoxic cells as foundation and starting material
Low risk of GvHD	Naturally allogeneic
Low risk of CRS and neurotoxicity	Potential for routine administration and broad outpatient access
Predictable pharmacokinetics	Potential for flexible multi-dose and multi-cycle treatment

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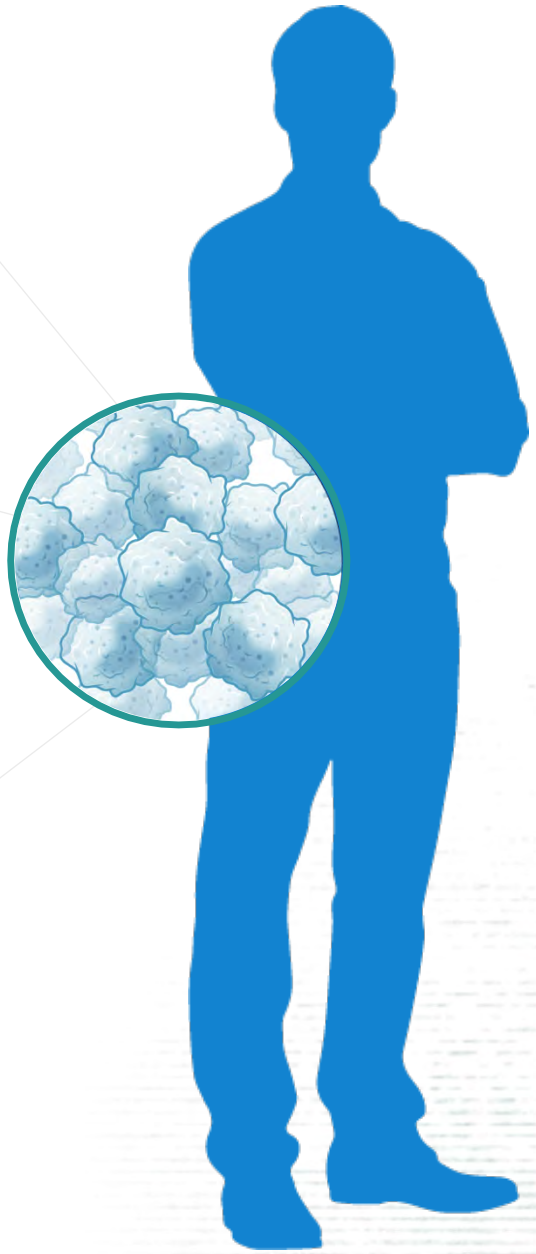
Next gen platform enlists natural, healthy human NK immune cells for optimal product

Donor selection for desired cell features

Process starts with highly active, cytotoxic, NK cells

Multiplex gene engineering to enhance immune cell performance



Which allows for:

- Potential for universal donors and master cell banks
- Efficient manufacturing enables rapid, large-scale production
- Well defined, high quality, consistent product

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Staying Ahead of the Curve:

A Platform That Incorporates Multiple Next Generation Enhancements

- ✓ Armored cells with membrane-bound IL-15 for persistence
- ✓ Multiplexed CRISPR/Cas9 genome engineering
- ✓ Enhanced expansion, persistence and TME resistance via CISH deletion
- ✓ Cytokine activation using IL-12, -15 and -18 to enhance anti-tumor activity persistence and memory-like properties
- ✓ Clinical trial designs include multi-doses and multi-cycles of treatment
- ✓ No requirement for cytokine support

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Evolving body of clinical data validates NK approach

NKG2D and non-engineered NK cells

~30 clinical studies

Well tolerated and **no GvHD**
(non-transplant)

~600
patients treated

~330
AML/MDS patients

~100
R/R AML patients
(non-transplant)

~34% aggregate CR rate

CD19

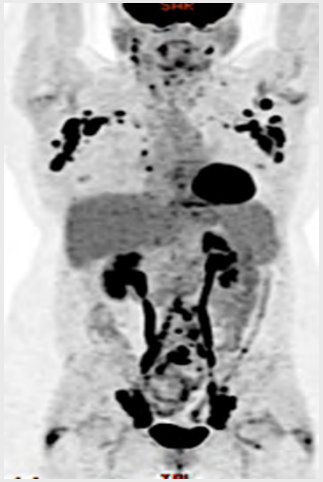
MD Anderson study with CD19 CAR-NK cells
New England Journal of Medicine, Feb 2020

7 / 11 CRs

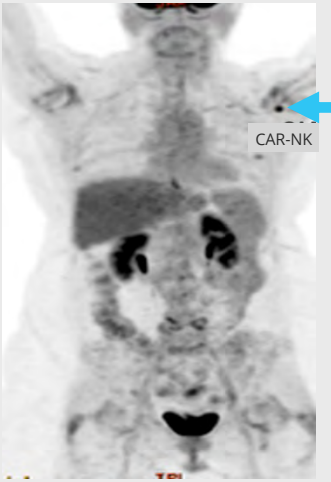
CRs in advanced B cell malignancies

No reported CRS, GvHD or neurotoxicity

PRE-TREATMENT



DAY 30 POST CAR-NK



Patient achieved CR. CAR-NK cells traffic to sites of disease

Update: ASH 2020 Activity and tolerability of engineered NK cells in multiple clinical studies

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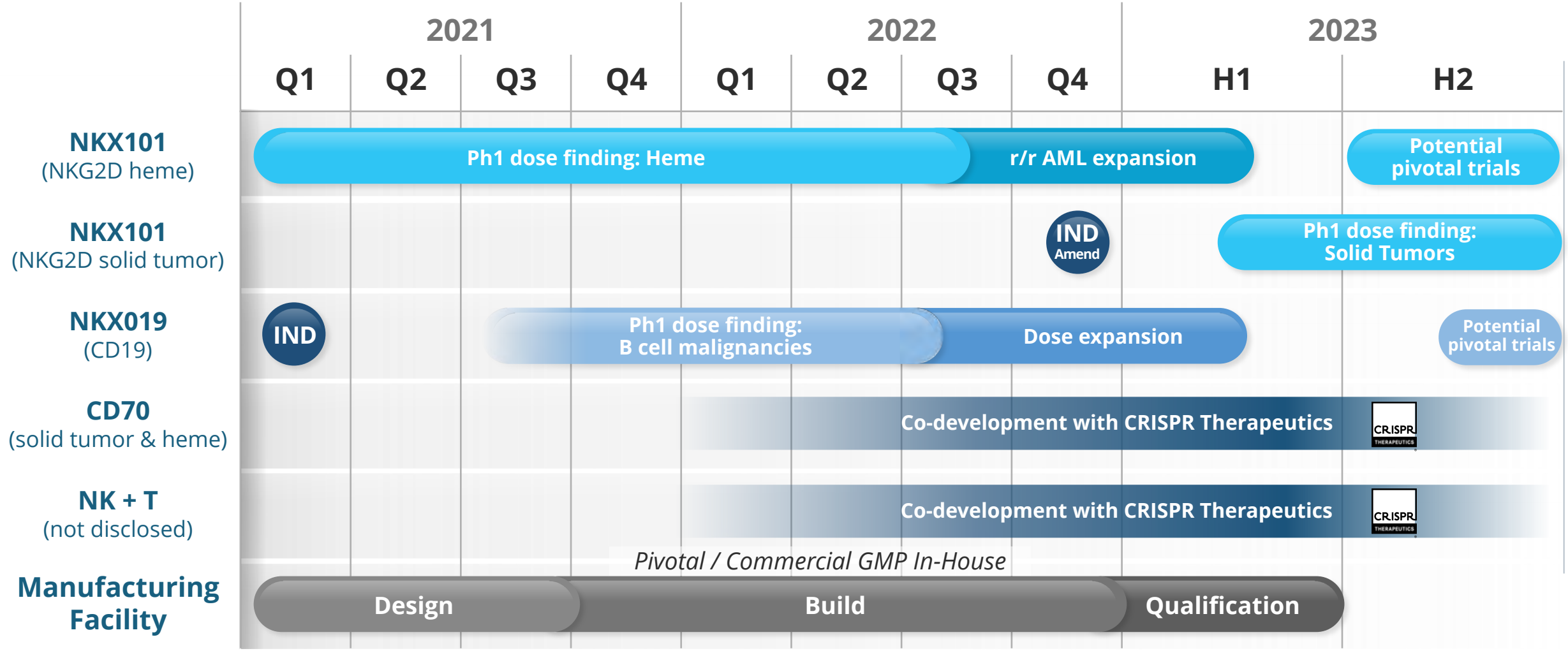
Bachier 2020; Nkarta systematic literature review. CR: Complete remission.

K. Rezvani, et al., N Engl J Med 2020, 382:545-553. DOI: 10.1056/NEJMoa1910607. Takeda Investor Day 2019.
CRS: Cytokine release syndrome. GvHD: Graft versus host disease.

Platform-driven pipeline with multiple upcoming milestones



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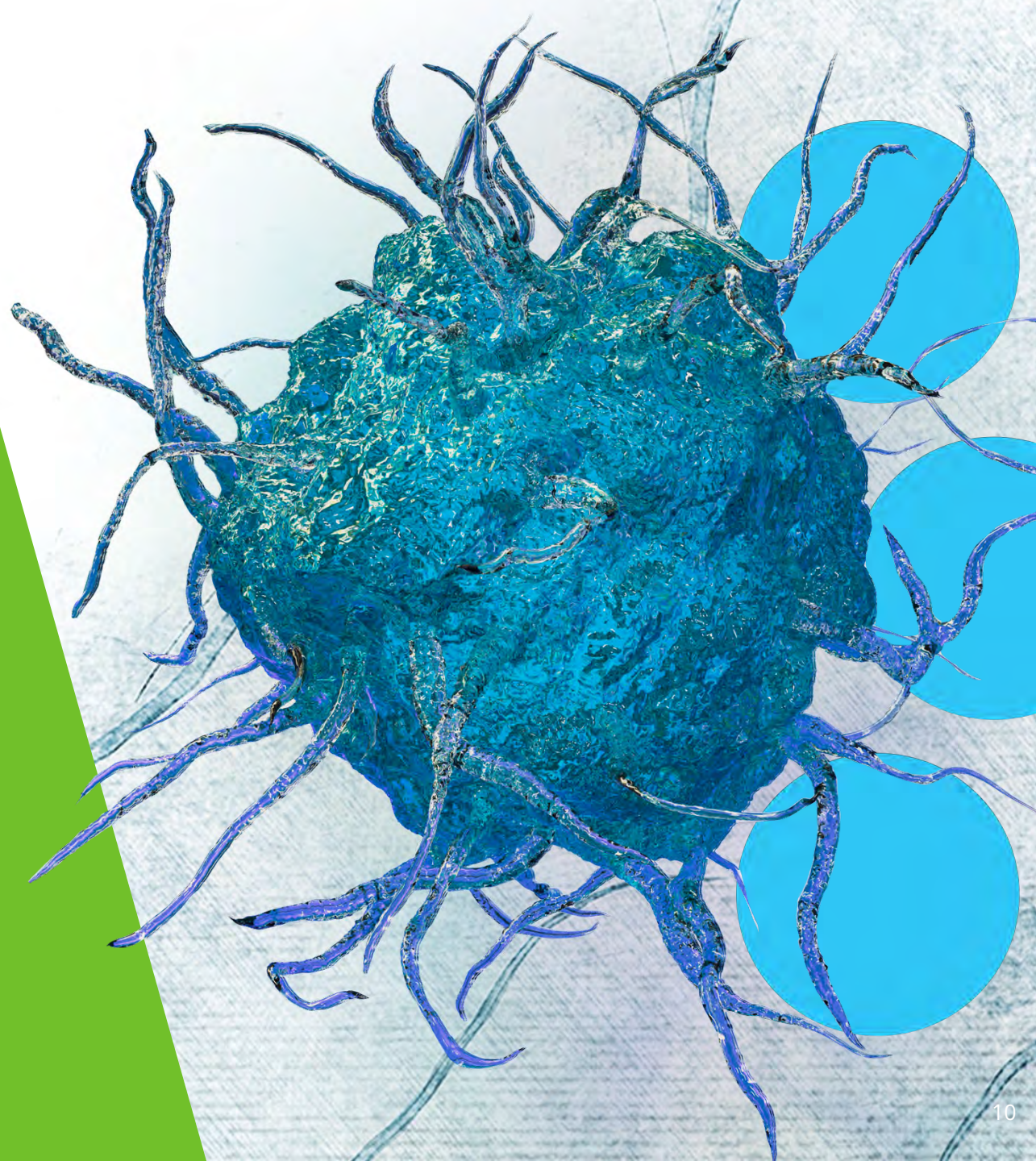
Platform



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Harnessing the power and efficiency of healthy adult NK cells for the next revolution in cell therapy

CELL SOURCE

FEATURE	AUTOLOGOUS	IPSC	DONOR
MANUFACTURING	Highly difficult to scale	Complex NK differentiation and expansion over 4-8 weeks	✓ **Robust and scalable 2-week process starting with real NK cells**
GENETIC ENGINEERING	Costly and inconsistent	Requires single cell isolation, extensive pre-clinical characterization	✓ **Consistent, cost-effective, and efficient**
FINAL PRODUCT IDENTITY	Driven by process alone	Sensitive to control of differentiation at scale, subject to genetic drift	✓ **Highly consistent NK cell function and phenotype**
POTENCY	Variable with starting material; Diminished cell killing capacity due to self recognition and NK cell dysfunction in cancer	Driven by process and genetic engineering	✓ **Donor selection, process, and engineering for optimal potency**
PACKAGING AND DELIVERY	Limited doses/complex logistics	Cryopreserved and off-the-shelf	✓ **Cryopreserved and off-the-shelf**

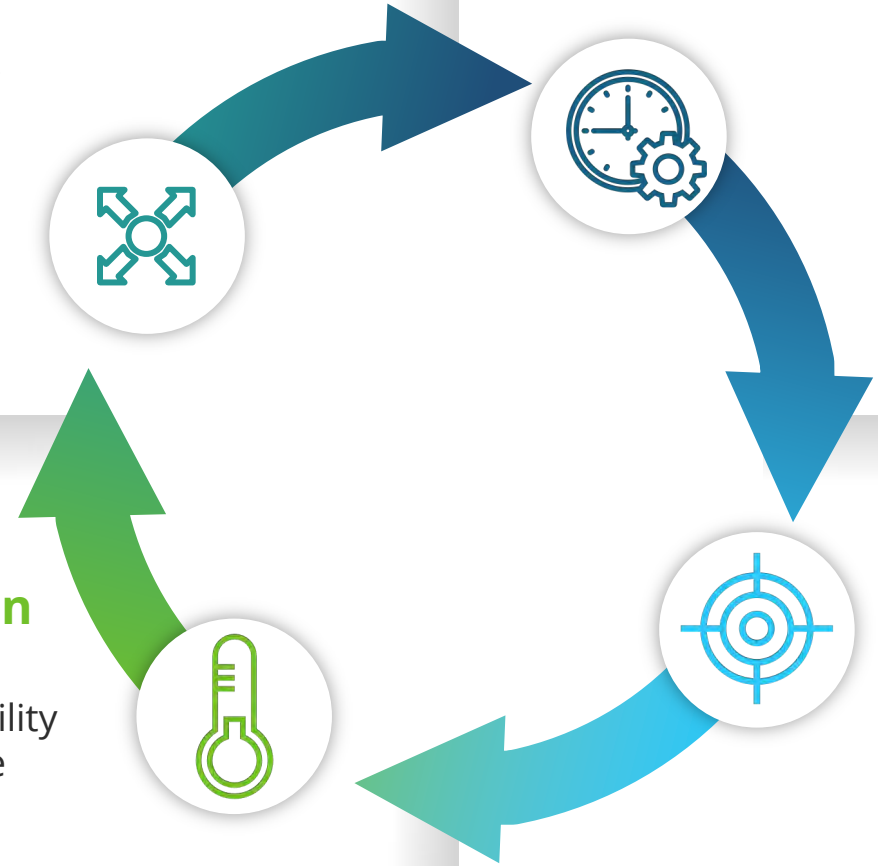
Proprietary technologies in place for a best-in-class NK cell platform

Expansion

Donor NK cells are co-cultured with proprietary K562 stimulatory cell line to achieve **high cell numbers**

Persistence

NK cells are engineered for expression of proprietary **membrane bound IL-15** to enhance time in circulation



Targeting

NK cells are engineered for expression of **optimized CARs**

Cryopreservation

Freezing process maintains NK cell viability and potency to enable true **off-the-shelf cell product**

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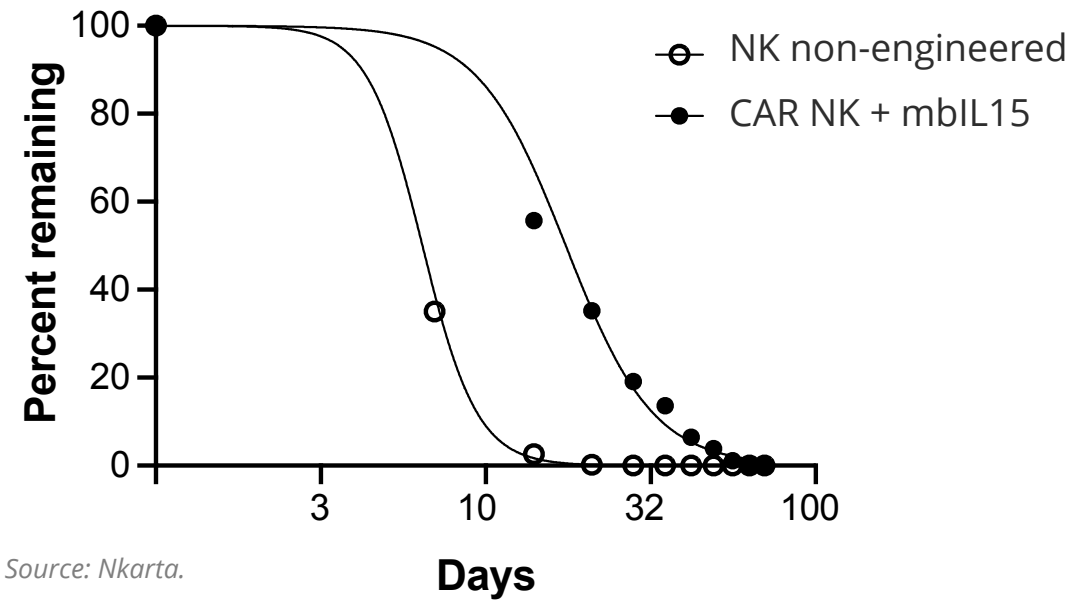
Superior NK cell persistence from membrane bound IL-15

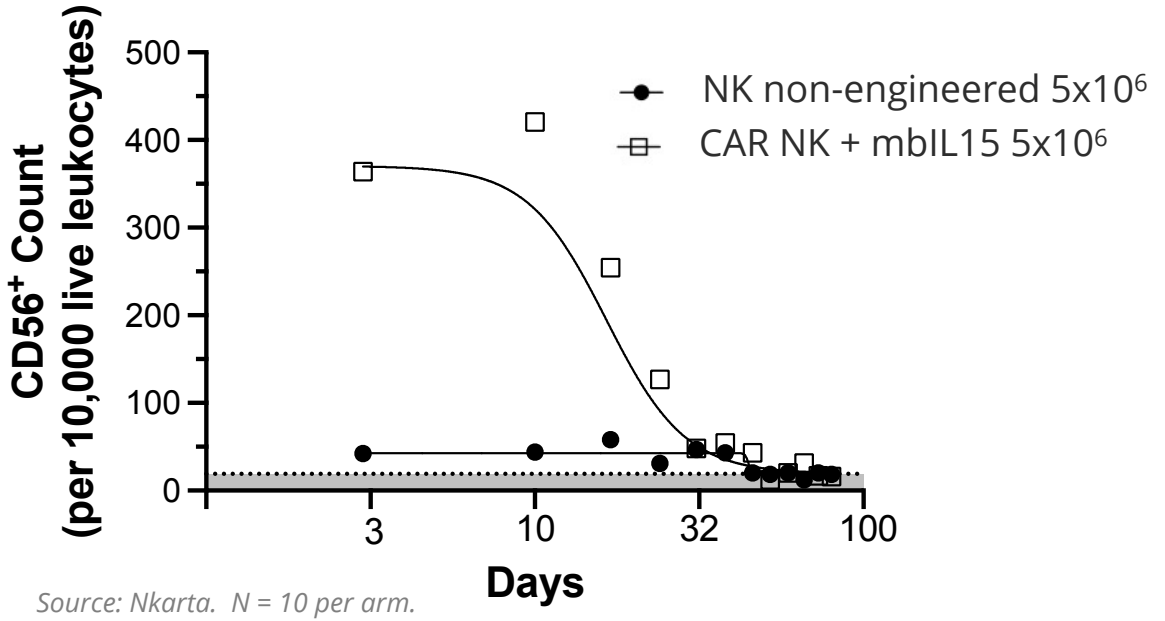
IN VITRO PERSISTENCE



Source: Nkarta.

2-fold increase in exposure observed in vitro with a single administration

IN VIVO PERSISTENCE AND EXPANSION IN NSG MICE



Source: Nkarta. N = 10 per arm.

7-fold increase in exposure observed in vivo with a single administration

NK cells engineered to express membrane-bound IL-15 (mbIL-15) demonstrate superior persistence as compared to unmodified NK cells

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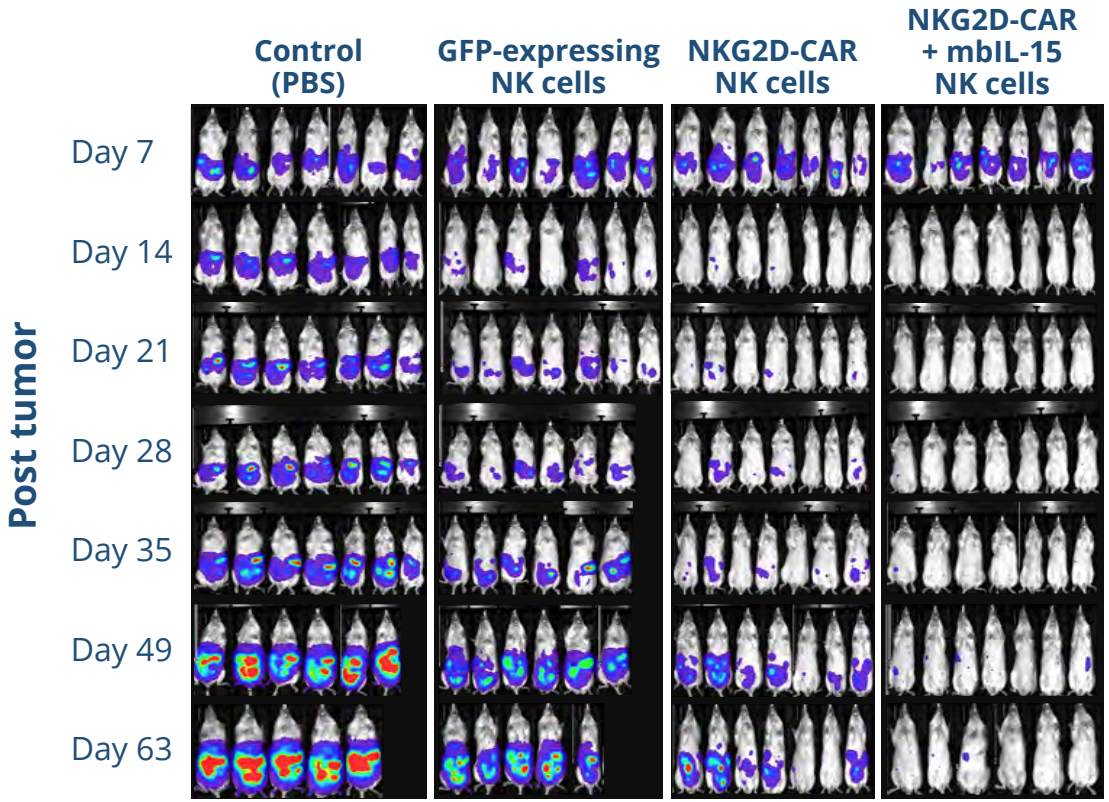
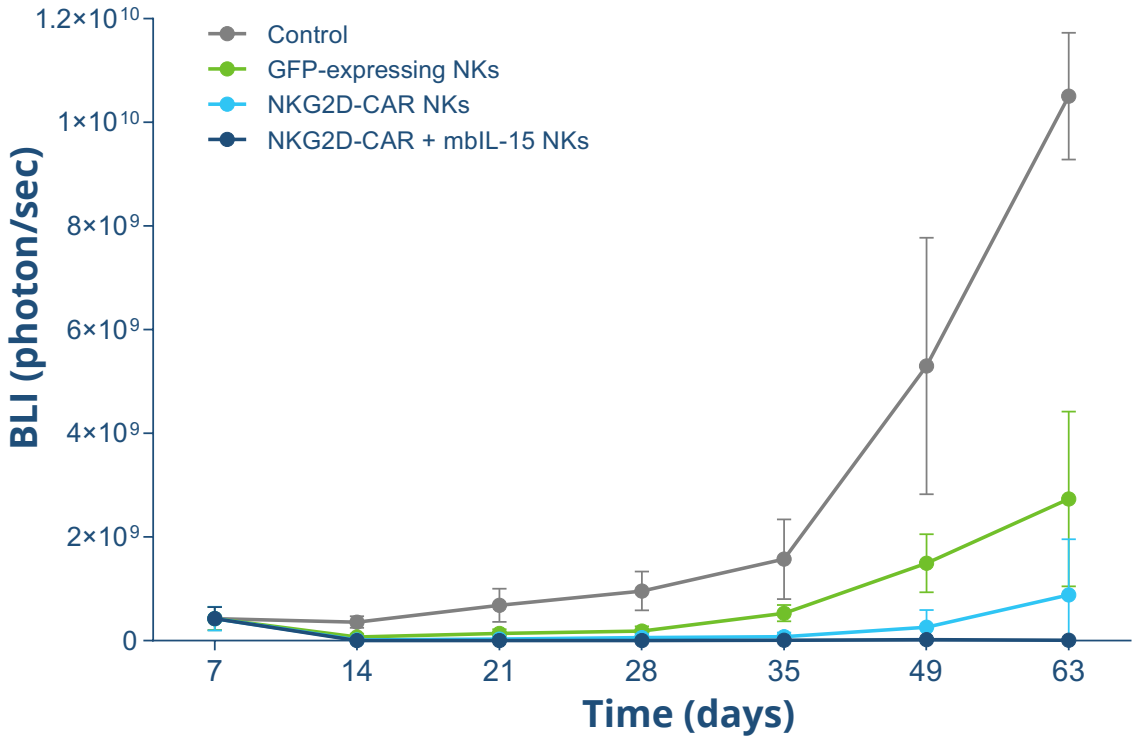
Persistence and targeting to maximize anti-tumor activity



Source: Nkarta. U2OS osteosarcoma model; 3 x 10^6 NK cells administered on D7. Graphical data at right are average BLI of mice above.



NK cells demonstrate enhanced tumor killing when engineered for targeting and mbIL-15 expression

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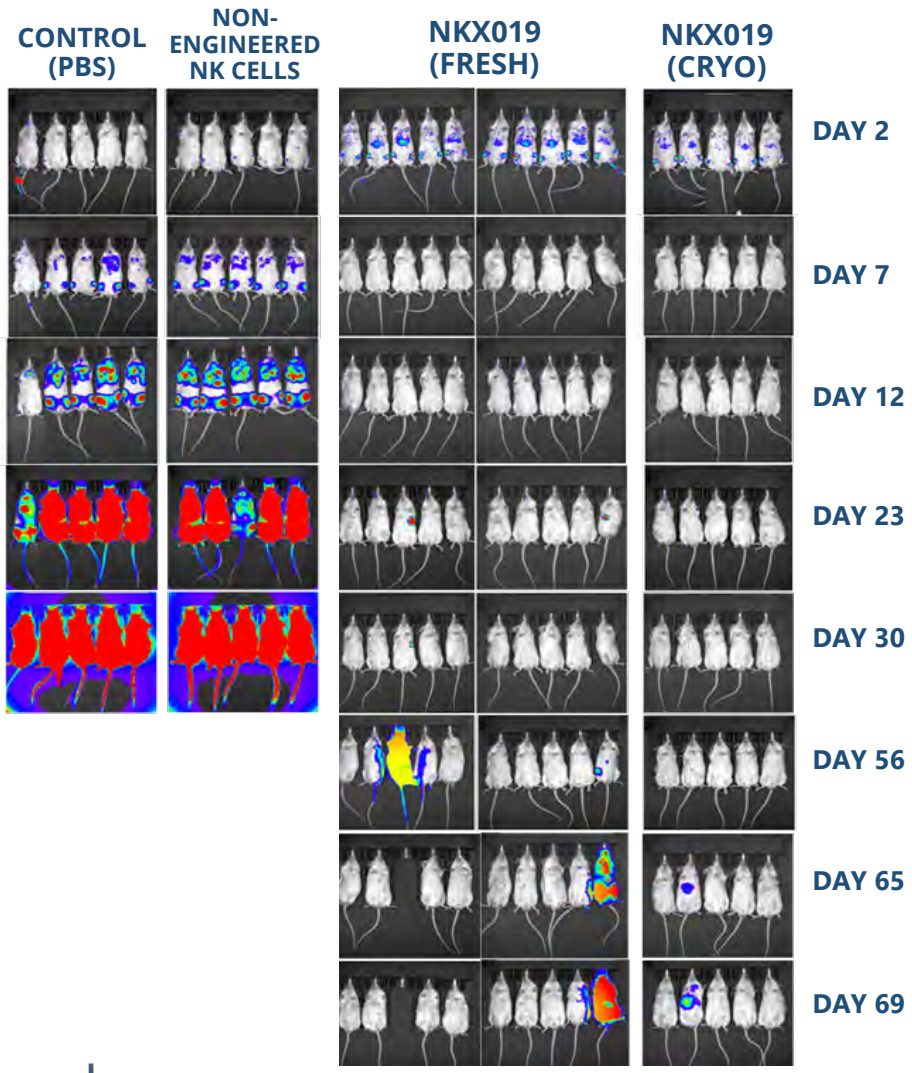
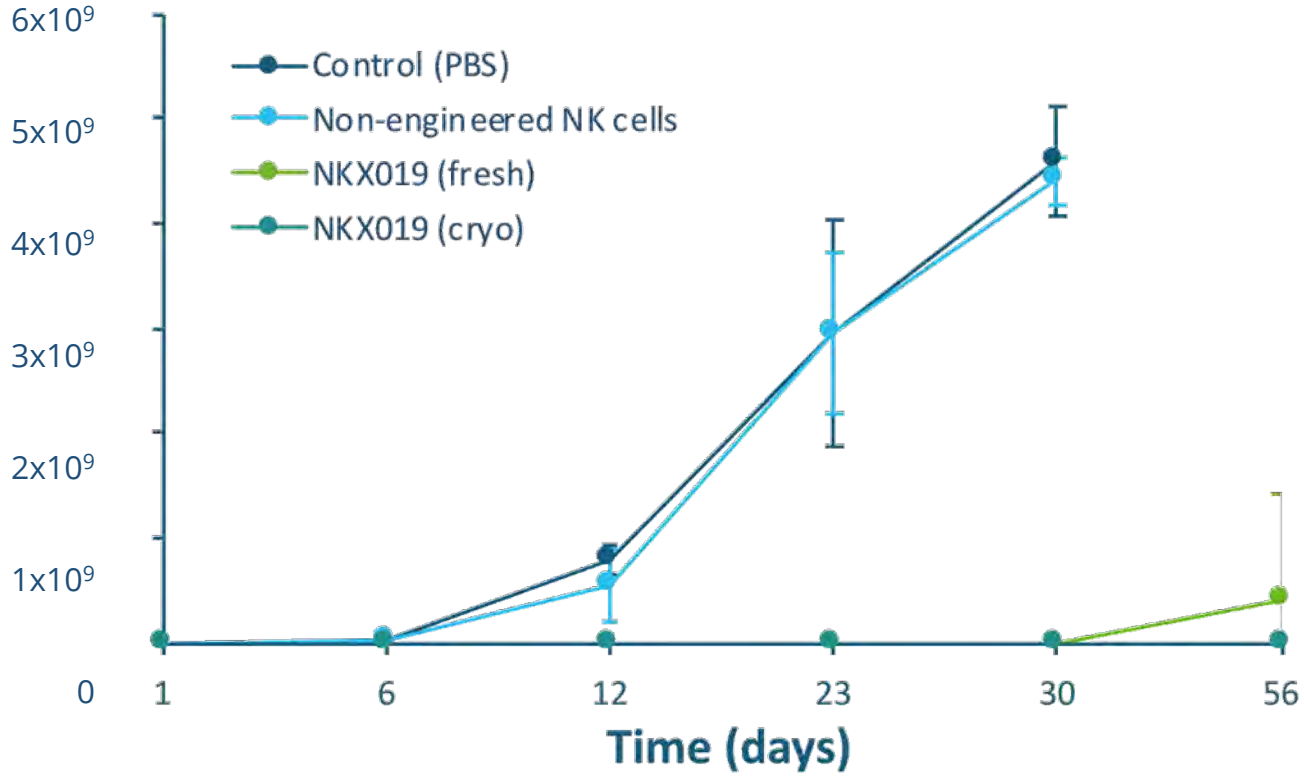
Our cryopreserved products are highly cytotoxic





Nalm-6 lymphoma model. 107 cells administered one day post tumor. Graphical data above are an average of mouse luminescence at left. "Cryo" denotes cryopreserved then thawed NKX019.

NKX019 production under optimized conditions allows cryopreservation with retention of *in vivo* activity

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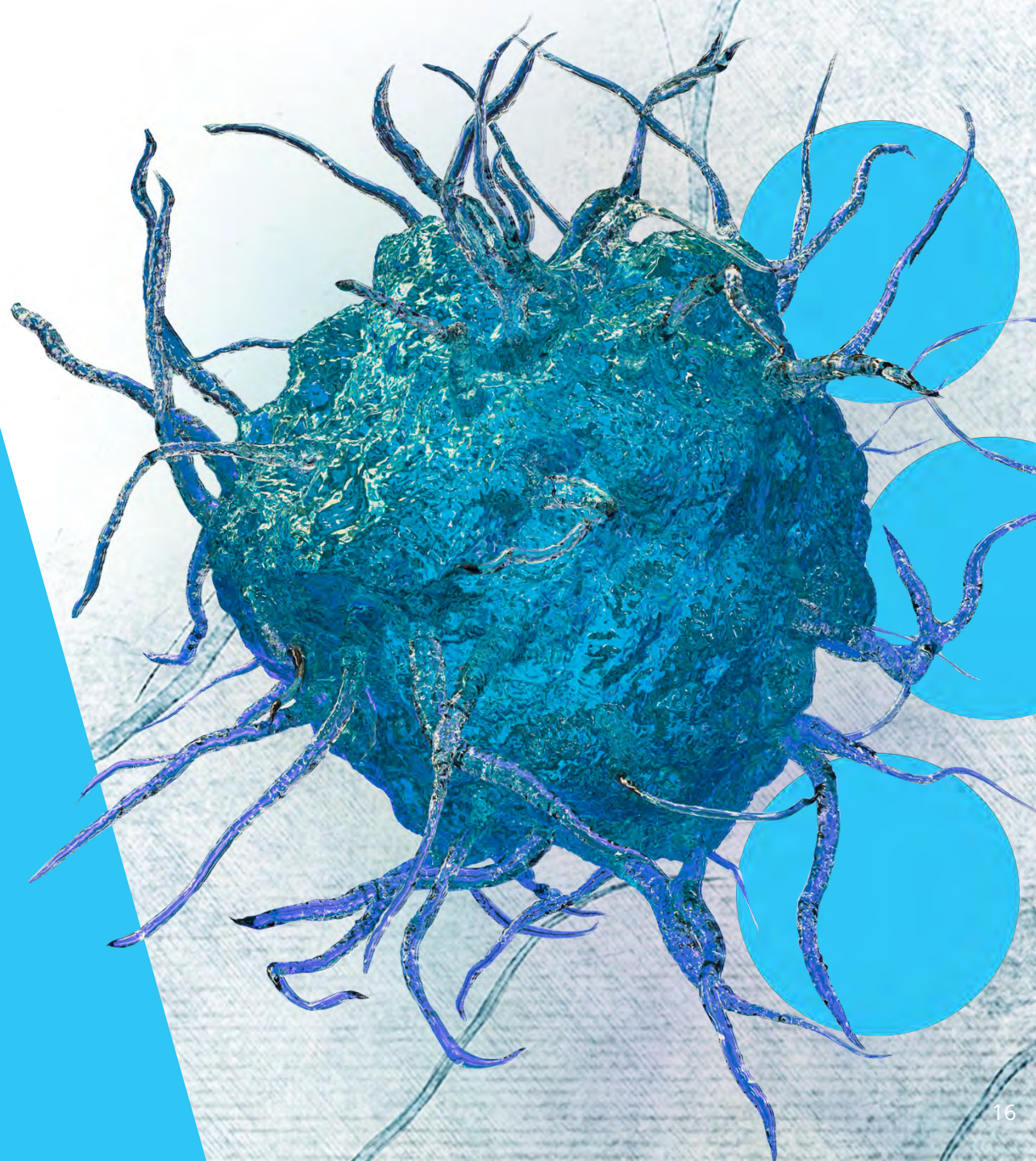
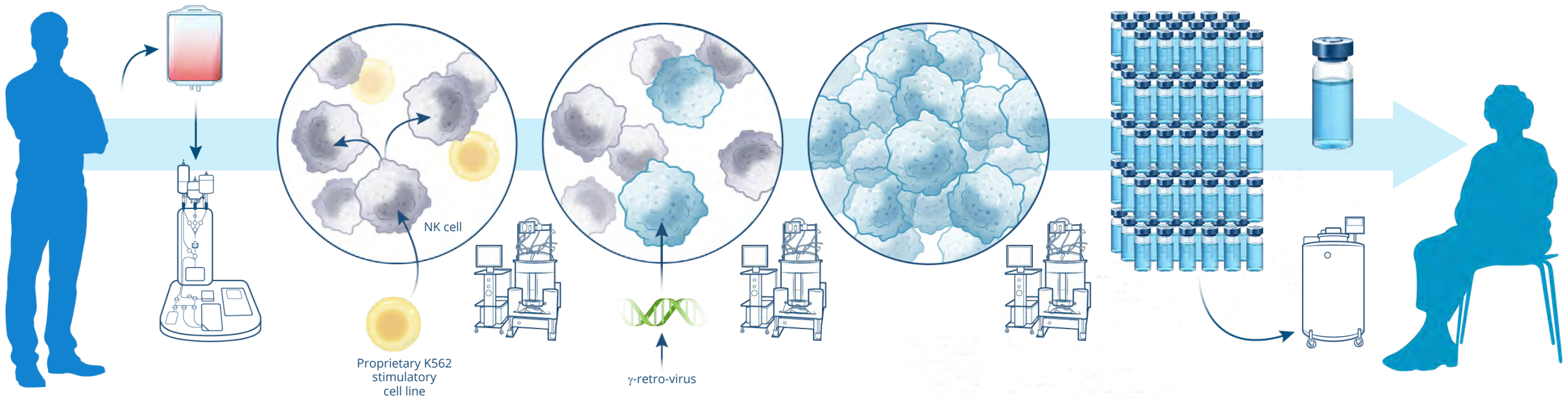
Manufacturing



A powerful and efficient process for off-the-shelf products



NK cells collected from healthy donors by leukapheresis.

NK cell expansion using proprietary stimulatory cells.

Expanded NK cells are transduced to express mbIL-15 and CAR.

Continued expansion driven by mbIL-15.

Harvesting and cryopreservation of final cell product.

NK product candidate is thawed for off-the-shelf administration to patients.

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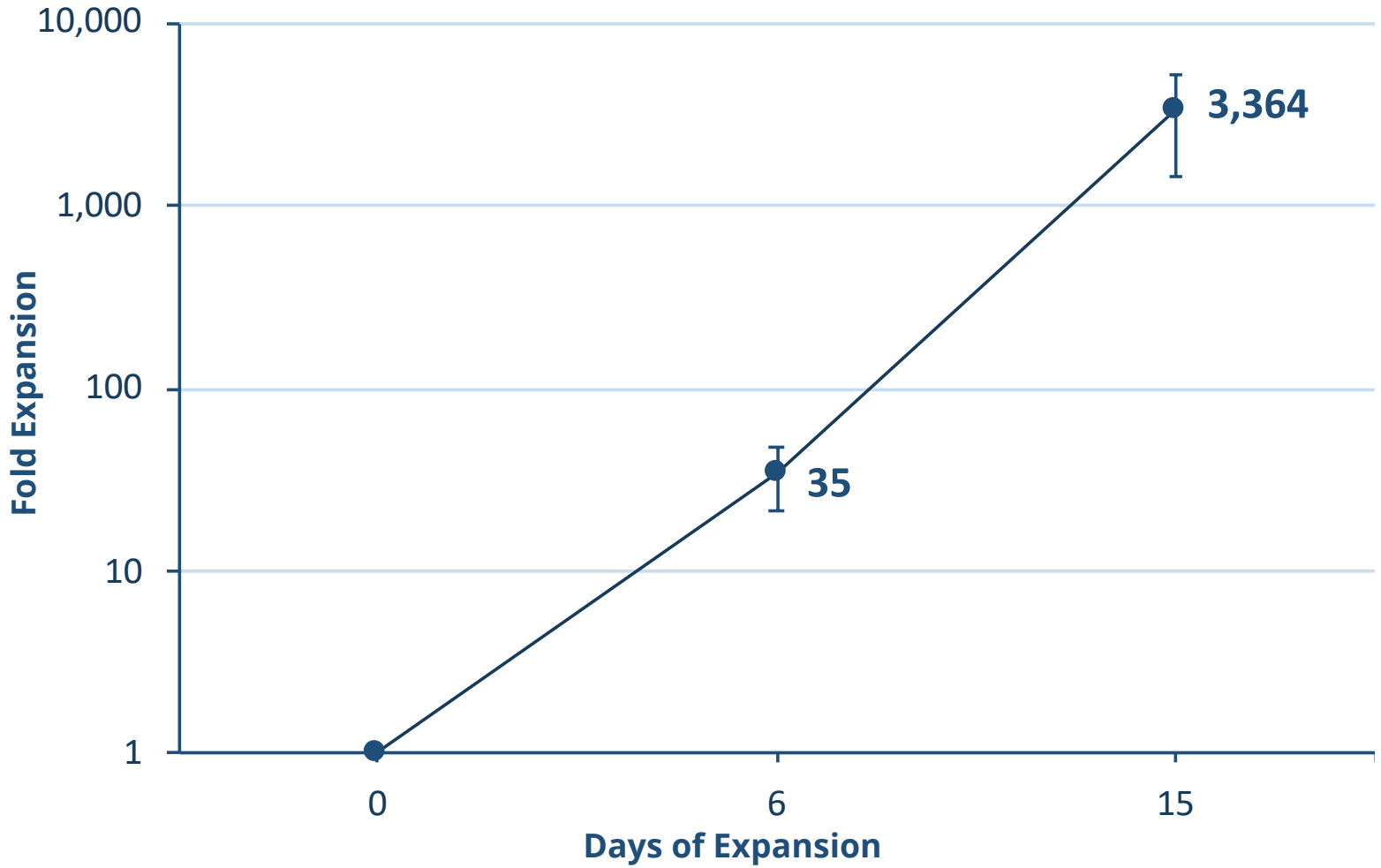
Proprietary expansion enables industrial-scale manufacturing



Robust, rapid expansion produces

≥500 doses

in a single manufacturing run, with potential of

1,000s of doses per run

Projected cost of commercial manufacturing at peak:

~$2,000

per dose*

Data above are from the process development of NKX019 for cGMP manufacturing and are an average of 5 expansions from 4 different donors.

** Assumes 500 doses of 1 billion cells, per batch*

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Clinical GMP Facility South San Francisco, CA

In-house manufacturing to control process and production

CLINICAL GMP FACILITY

Multi-product facility to support clinical development

Clinical production expected to start in 2021

FUTURE COMMERCIAL-SCALE FACILITY

Design and engineering process initiated

Facility expected to supply pivotal trials of NKX101 and NKX019

Modular design for future expansion to meet commercial demands

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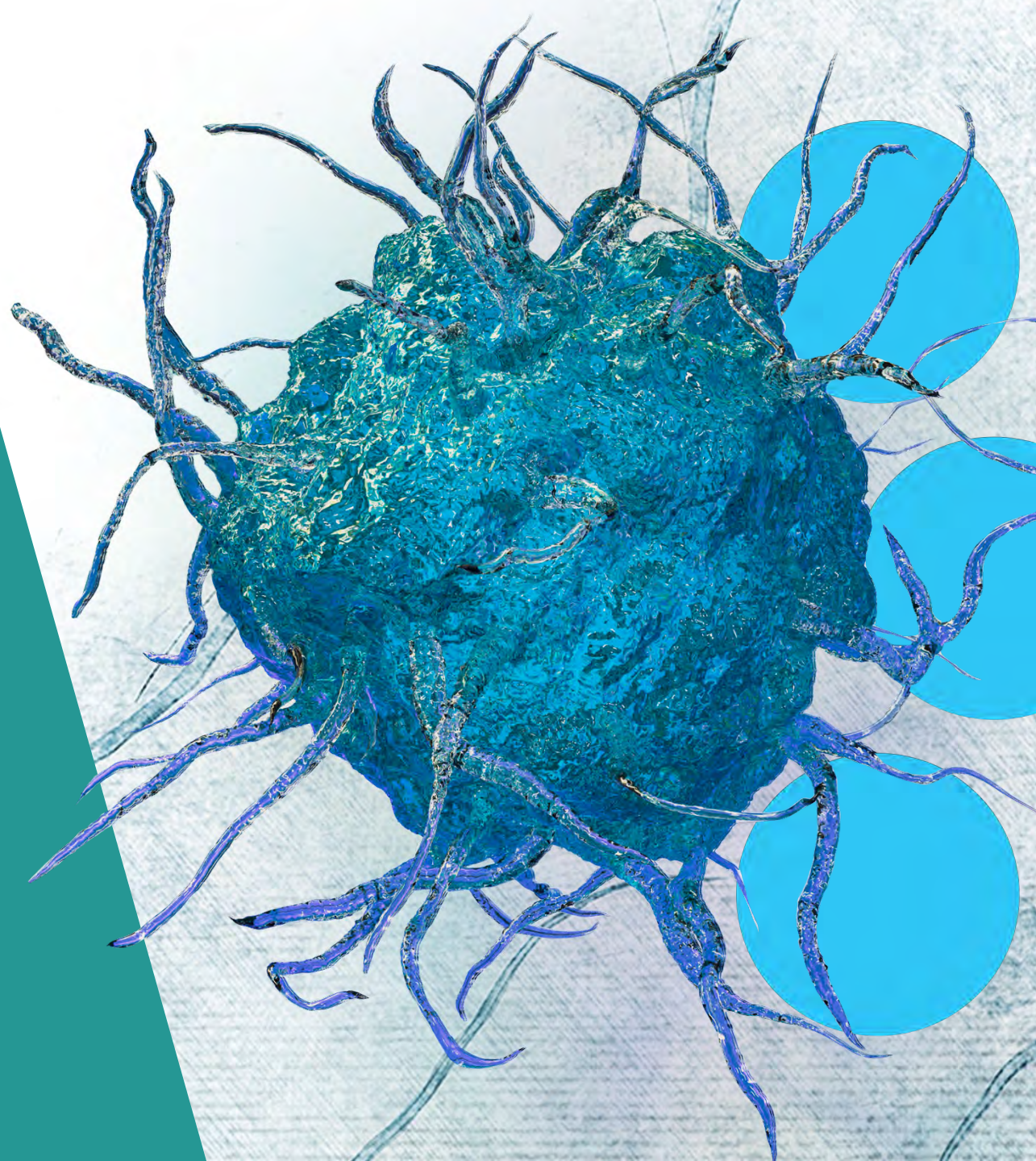
Pipeline



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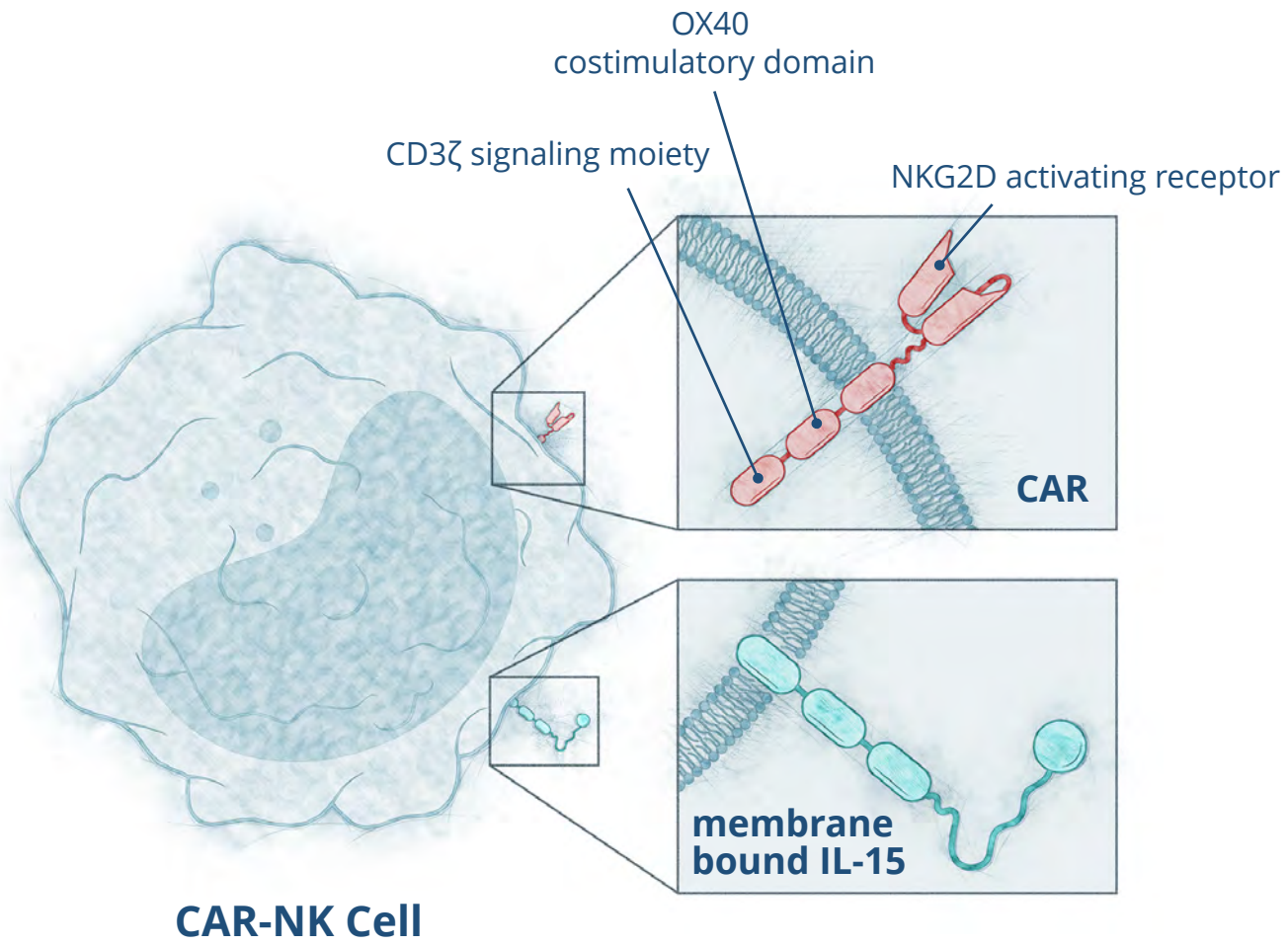
NKX101: CAR-NK targeting NKG2D ligands

NKG2D receptor is primary driver of NK cell activation and tumor killing

>10x increase in NKG2D expression vs. non-engineered NK cells

OX40 selected based on superiority vs. other costimulatory domains

Targets of NKG2D are selectively over-expressed in cancer cells



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NKG2D: ligands in multiple tumors, responses in AML

NKG2D ligand expression is documented in multiple tumor types

TUMOR TYPE	REFERENCE
AML, ALL, CML, CLL	Hilpert, *J Immunol* 2012
MULTIPLE MYELOMA	Carbone, *Blood* 2005
HCC	Kamimura, *J Hep* 2012
BREAST	de Kruijf, *BMC Can* 2012
OVARIAN	McGilvray, *Int J Can* 2010
LUNG	Okita, *Can Imm Immunother* 2016
COLON	McGilvray, *CCR* 2009
MELANOMA	Vetter, *J Inv Derm* 2002
OSTEOSARCOMA	Lu, *Neoplasma* 2008
GLIOMA	Weiss, *CCR* 2018

Clinical responses observed in R/R AML with non-engineered allo-NKs validate NKG2D

STUDY	RESPONSES*
Bachanova, *Crit Rev Oncog* 2014, A+B cohorts	9 / 42 (21%)
Bachanova, *Crit Rev Oncog* 2014, C cohort	8 / 15 (53%)
Curti, *Blood* 2011	1 / 5 (20%)
Kottaridis, *PLOS One* 2015	1 / 1 (100%)
Miller, *Blood* 2005	5 / 19 (26%)
Romee, *Sci Transl Med* 2016	5 / 9 (56%)
Rubnitz, *Pediatr Blood Cancer* 2015	6 / 12 (50%)
OVERALL	35 / 103 (34%)

**AML responses in patients with morphologic disease at baseline as reported in individual trials, patients with CR at study entry excluded from summary. The 35 responses include 20 CR, 12 CRi, 2 CRp and 1 MLFS.*

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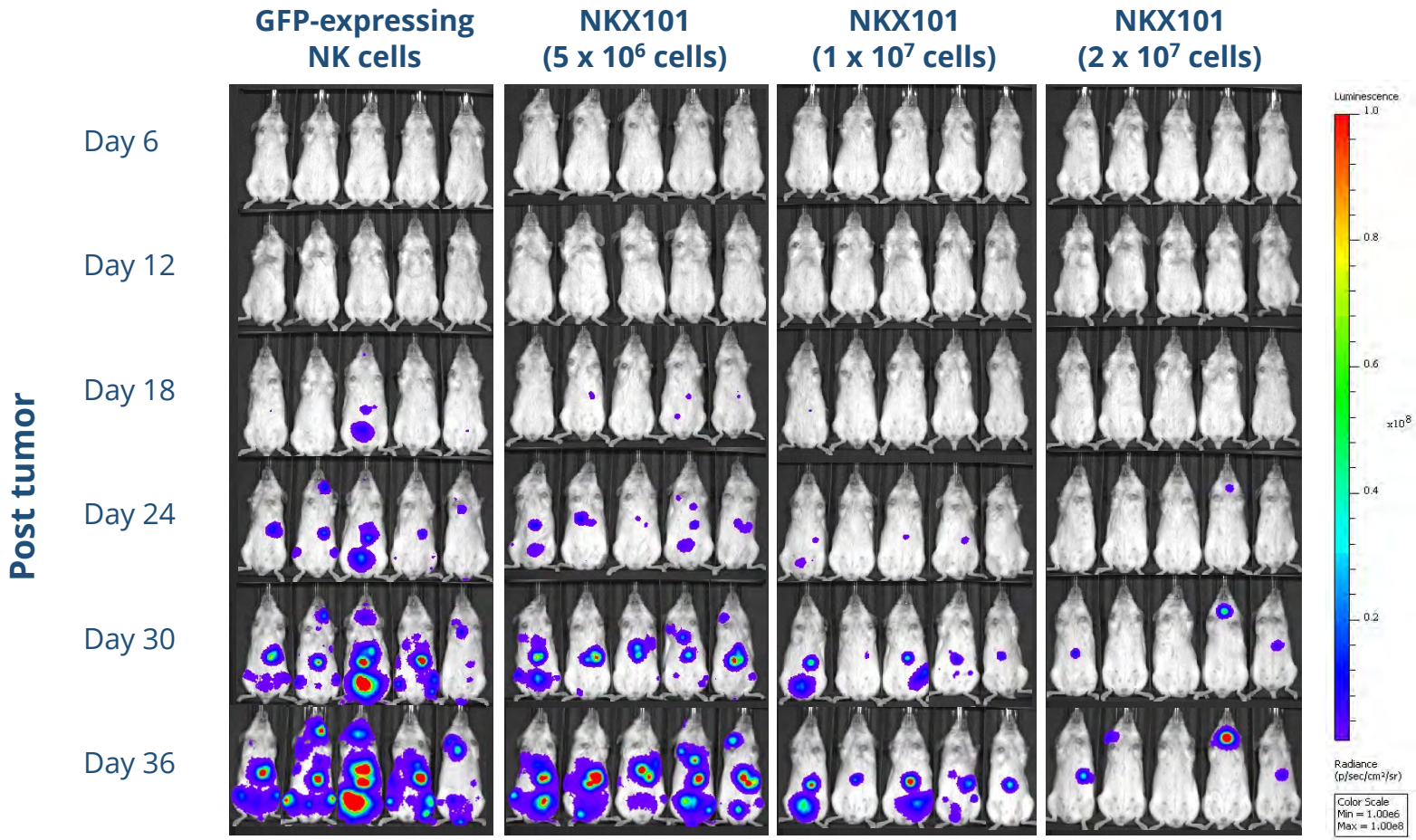
NKX101: Rationale in acute myeloid leukemia (AML)

NKG2D TARGETS ARE OVER-EXPRESSED
in AML blasts

CLINICAL ACTIVITY
with non-engineered NKs

UNMET NEED:

- AML US incidence: ~21K / yr
- 5-year survival rate ~28%



THP-1 xenograft model treated with a single dose of NK cells (i.v.)
2 days after tumor injection

Sources: SEER database; Veluchamy, Front Immunol 2017; Brayer ASH 2018; Hilpert, J Immunol, 2012

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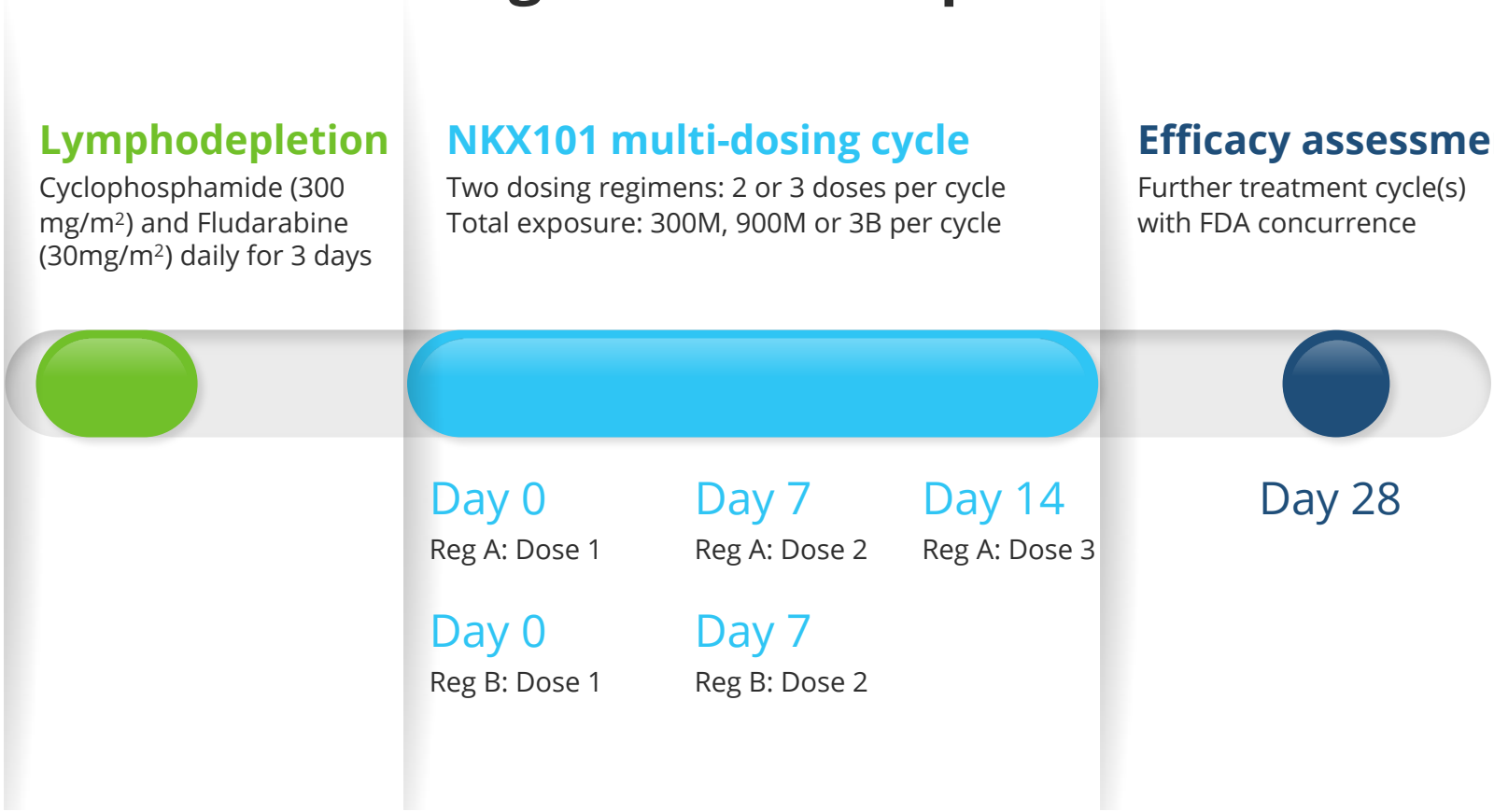
NKX101 Trial Design

- Modified 3+3 design
- 3 dose levels
- Multi-dosing
  - Regimen A: 3 doses/cycle
  - Regimen B: 2 doses/cycle
- Total CAR-NK cells per cycle: 300 M, 900 M or 3 B
- Potential for multiple treatment cycles
  lymphodepletion + multi-dose NKX101
- Off-the-shelf and haplo-related product

NCT04623944

Single-arm two-part multi-center Phase 1 study evaluating safety and efficacy of NKX101 in r/r AML and higher-risk MDS patients



AML: acute myeloid leukemia
MDS: myelodysplastic syndrome

NKX101 demonstrates anti-tumor activity in solid tumors

LIVER & BILE CANCER US INCIDENCE: ~42K / YR
5-year survival rate ~18%

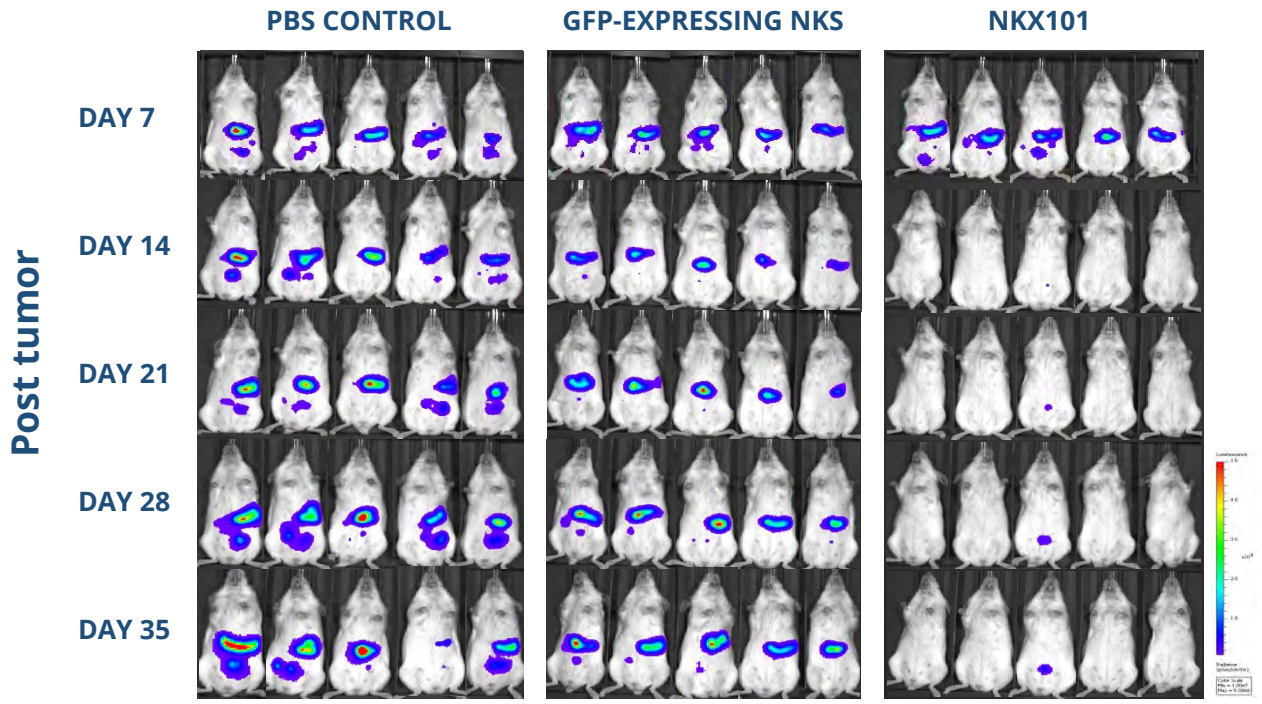
NKG2D TARGETS OVER-EXPRESSED
on HCC and CRC cells

NK CELLS ARE IMPORTANT IN LIVER
immunity and tumor surveillance

ACTIVITY OF NON-ENGINEERED NK
cells in HCC/ICC: 3/16 PRs

PLANNED PHASE 1: LOCOREGIONAL
delivery using SOC technique in 1° liver cancer or liver metastases

NKX101 activity in NSG mice



SNU449 HCC xenograft model
3 x 10^6 NK cells injected at day 7 post-tumor

HCC: Hepatocellular carcinoma. CRC: Colorectal cancer. Sources: SEER database; Sun Act Pharm Sin 2015; Kamimura, J Hepatology, 2012; Kamiya et. al, Cancer Immunol Res 2016; Qin 2017

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NKX019:
CD19 targeted CAR-NK

UNMET NEED REMAINS DUE to SAFETY, SPEED, ACCESS of APPROVED CD19 CAR-T THERAPIES

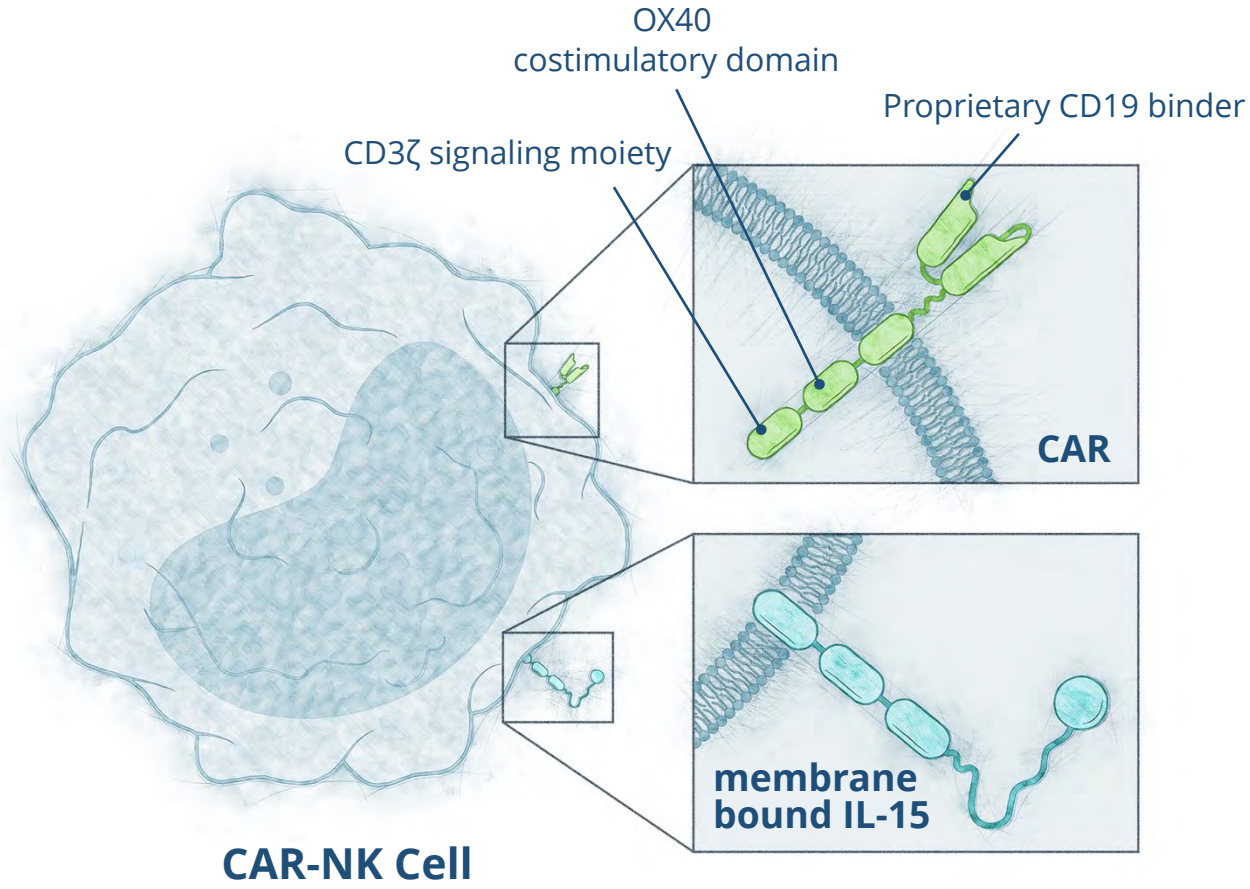
- Gr3+ CRS: 13–49%; Gr3+ neurotoxicity: 18–31%
- Limited number of specialized sites can treat
- 9–34% of patients in pivotal trials didn't receive cells (primarily due to mfg. challenges)

IL-12 and IL-18 EXPANSION ENHANCES *IN VITRO* and *IN VIVO* CYTOTOXICITY and PERSISTENCE

- In combination with Nkarta's NKSTIM feeder NK expansion platform

PATIENT DOSING EXPECTED TO START IN 2H 2021

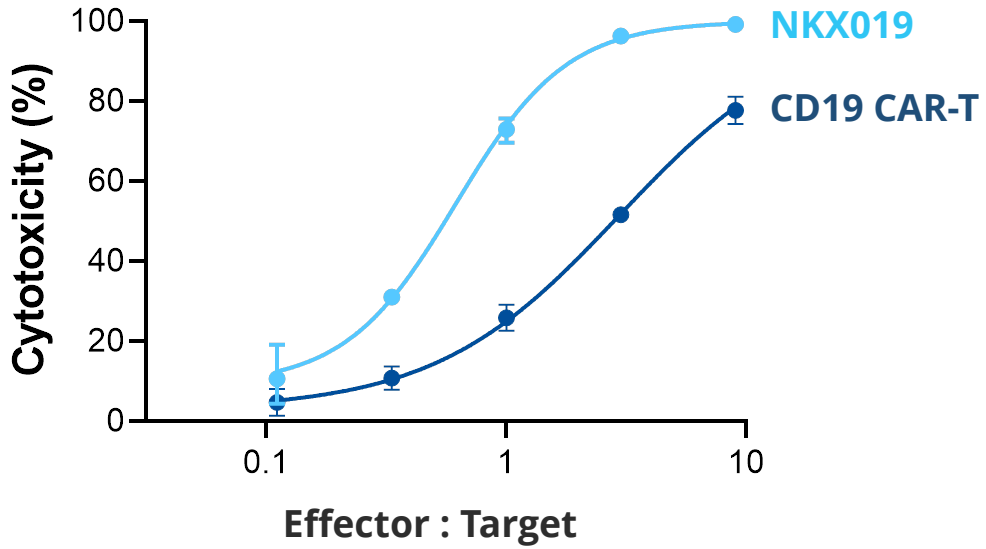
- Phase 1 in B cell malignancies



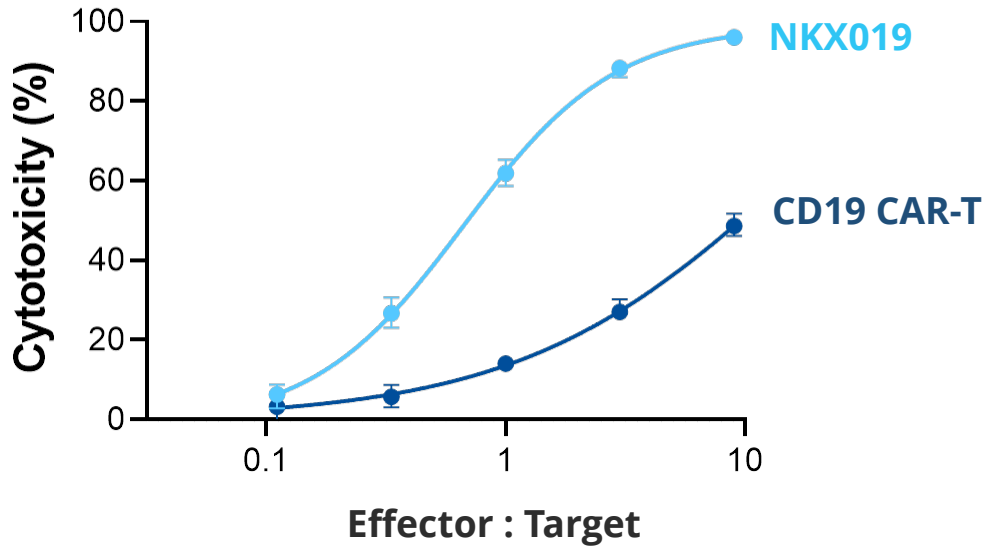
Sources: Kymriah® and Yescarta® package inserts; Rezvani NEJM 2020. Per NEJM publication, CR/SD patient achieved a CR for Richter's transformation and SD for underlying CLL. Trager SITC 2019.

NKX019 kills tumors with high or low levels of CD19 expression

High CD19 Expressing Cells



Low CD19 Expressing Cells



NKX019 can achieve high levels of cytotoxicity even when tumor cells express low levels of CD19 antigen, whereas CD19-targeted T cells are not as efficacious

Nalm6 cells engineered to express varying levels of CD19 were obtained from R. Majzner, Stanford
CD19 CAR-T cells: express construct used in Kymriah®
Effector : Target is the ratio of NK or T cells to tumor cells

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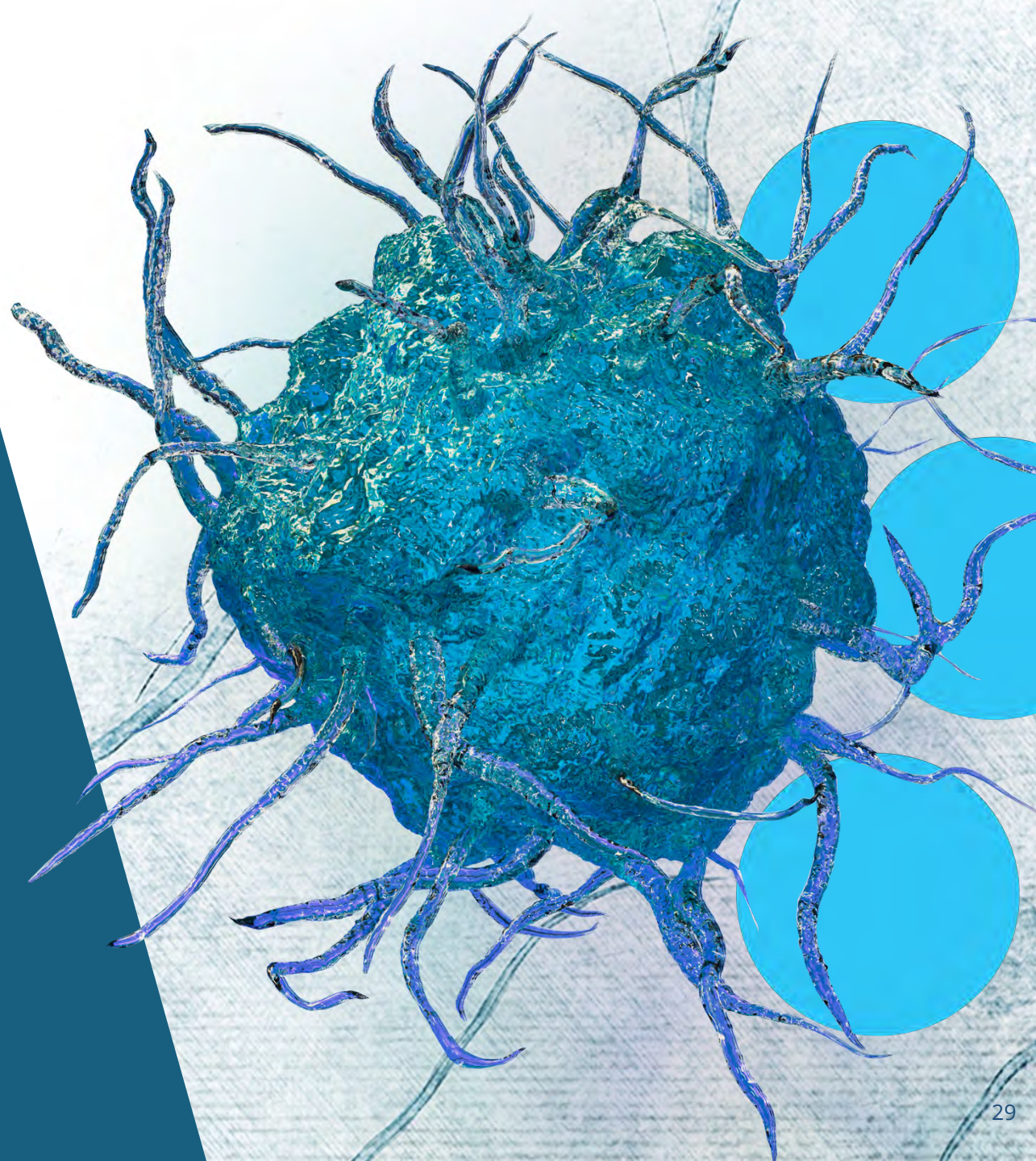
NKX019 Trial Design

- Modified 3+3 design
- 2 dose levels
- 300M, 1B CAR NK cells per dose
- 3 doses per cycle
- Potential for multiple treatment cycles
- Off-the-shelf product only
- Dose finding followed by multiple dose expansion cohorts

Single-arm multi-center Phase 1 study evaluating safety and efficacy of NKX019 in patients with r/r B cell malignancies

Corporate



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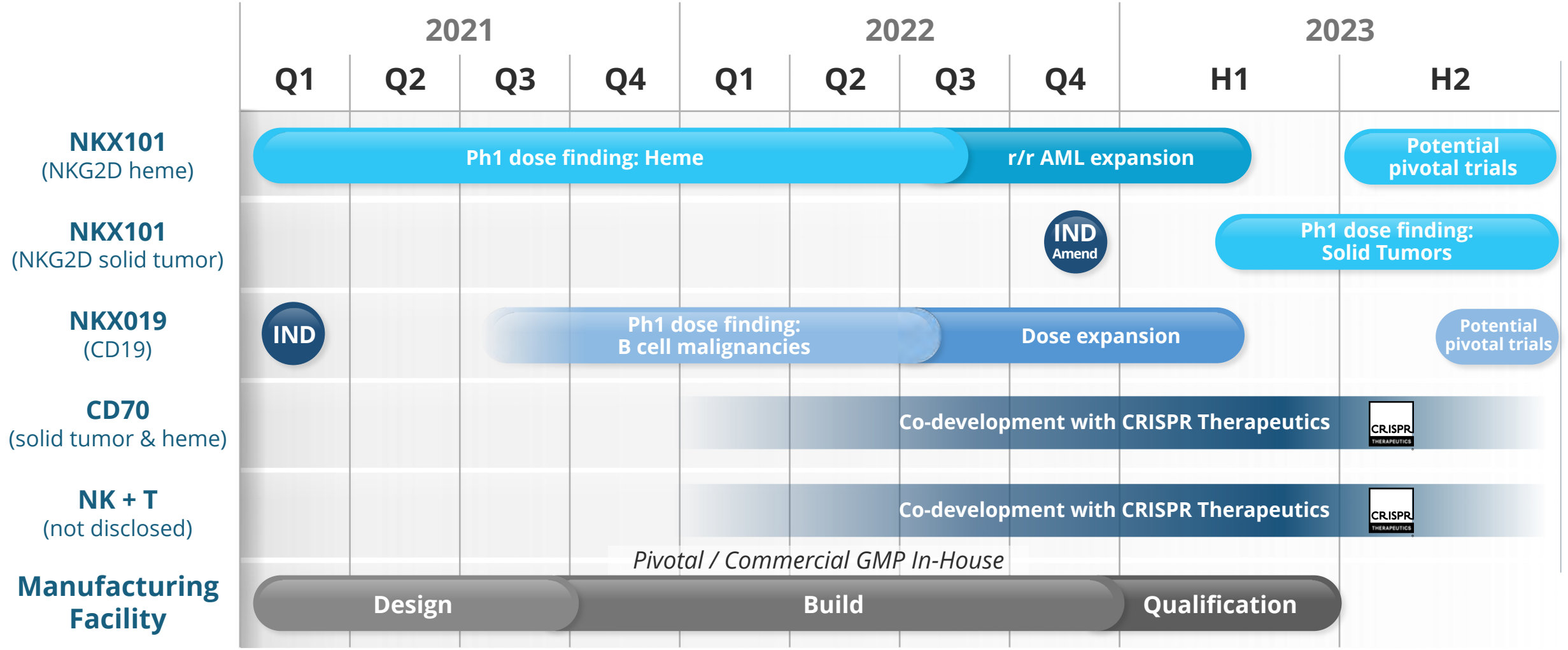
Platform-driven pipeline with multiple upcoming milestones



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Pioneering the next revolution in cell therapy

Efficient and robust next generation NK cell platform for blood cancers and solid tumors

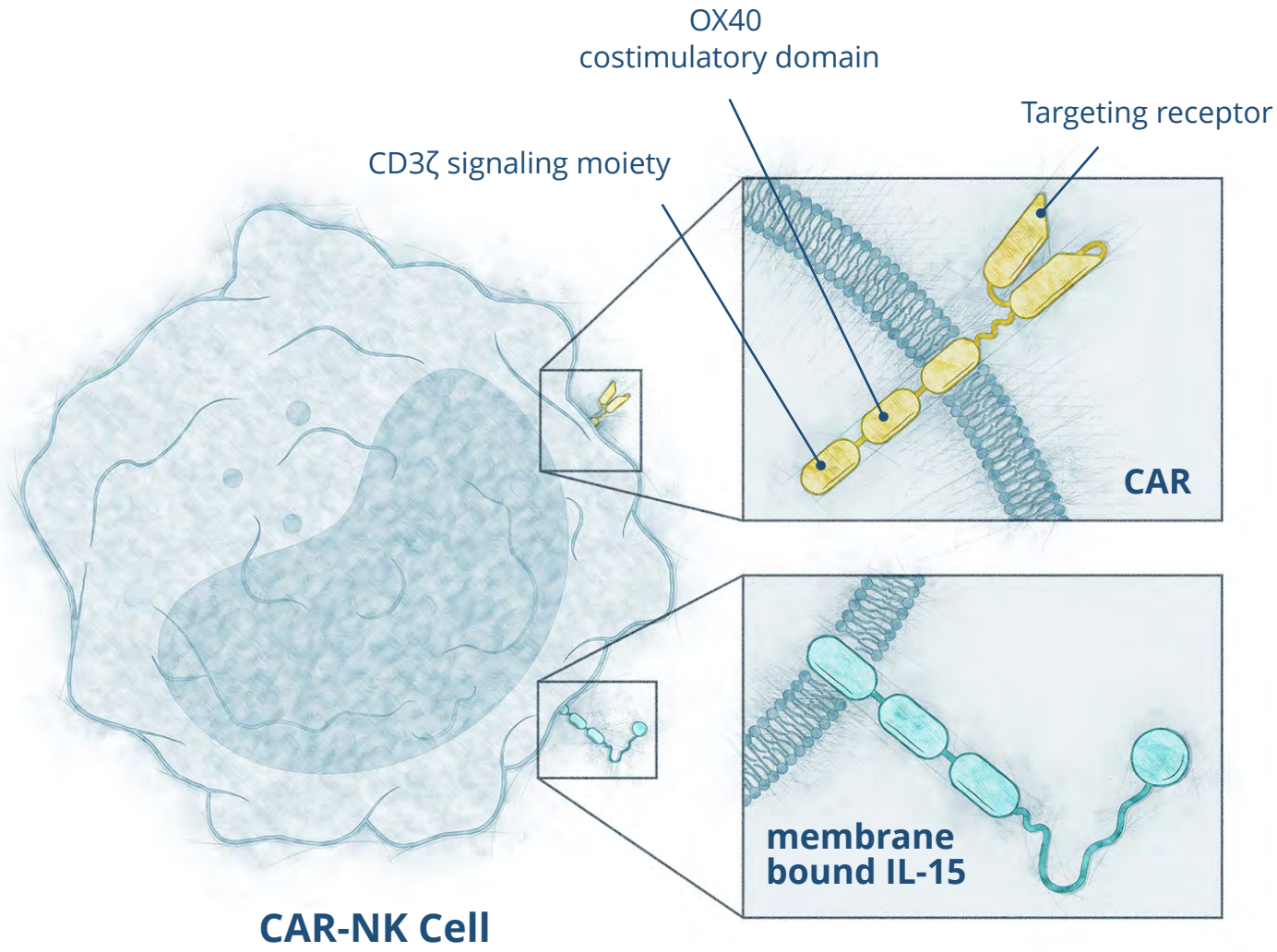
Allogeneic and off-the-shelf products

Industrialized manufacturing

Developed for outpatient administration

Co-lead programs

- NKX101: Phase 1 ongoing
- NKX019: FPI expected 2H 21



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Our Vision and Mission

OUR VISION

To be the leading company delivering innovative, accessible cell therapies for cancer patients, their caregivers and families

OUR MISSION

We strive 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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Thank you!