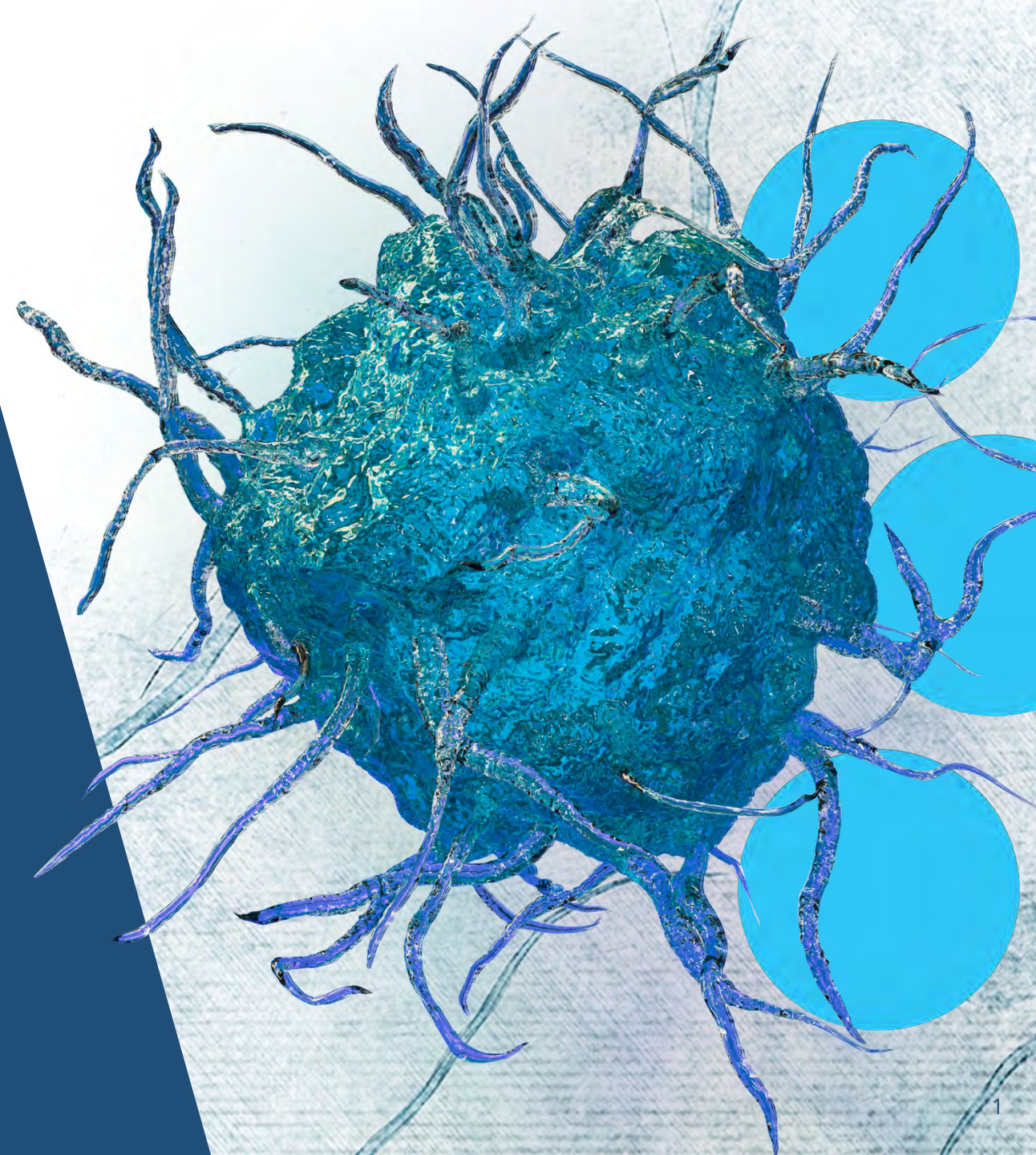


NEXT GENERATION

Natural Killer Cells

Engineered to Beat Cancer



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

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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

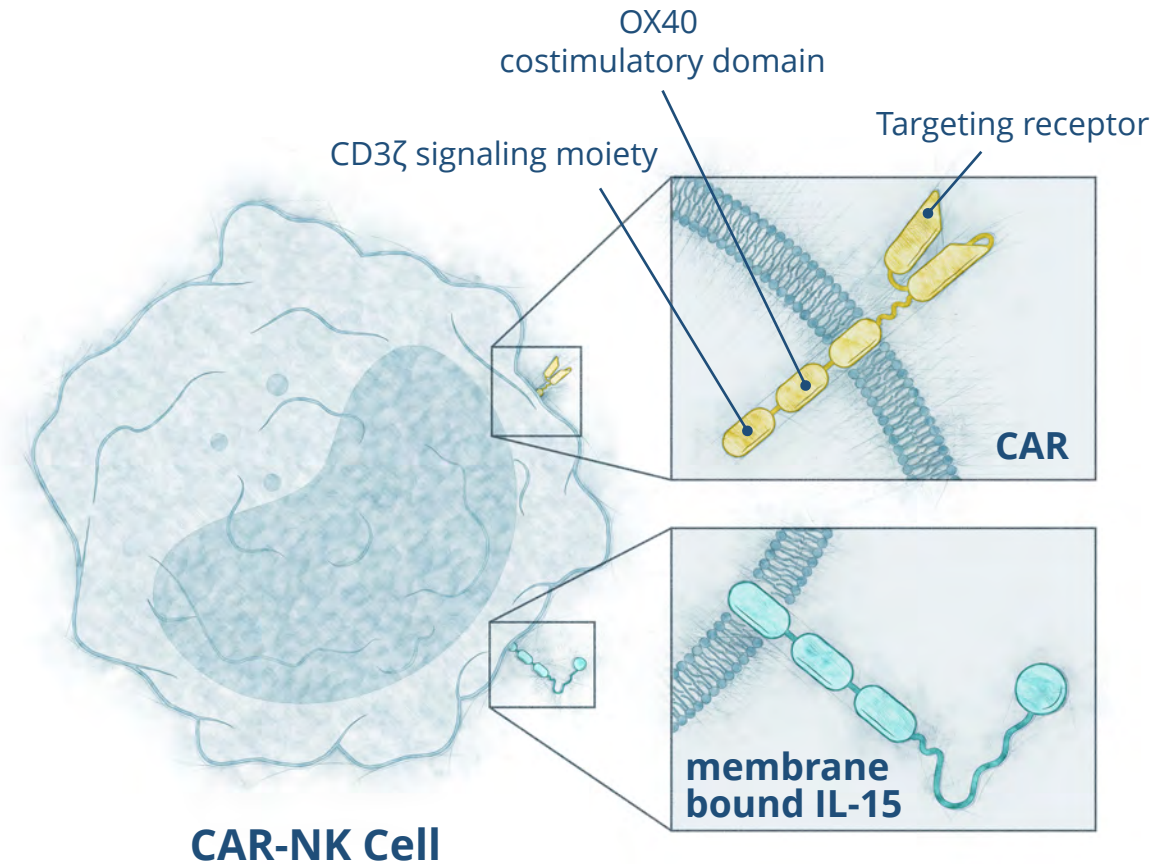
CO-LEAD PROGRAMS

NKX101:

Phase 1 ongoing

NKX019:

patient dosing to start 2H 21





**Cell therapy
leaders**

**Complementary
expertise**

Global Collaboration to Develop Gene Edited Cell Therapies

GENOME ENGINEERING CAPABILITY

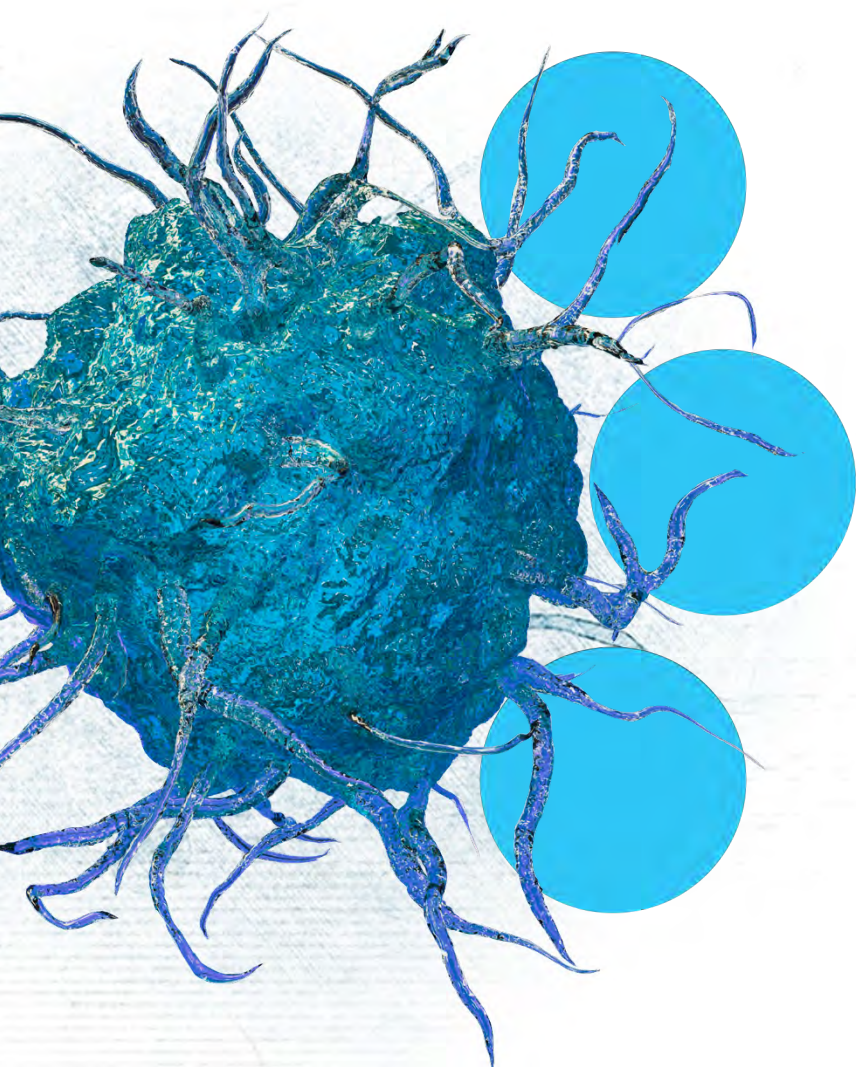
Best-in-class, clinically validated CRISPR gene editing

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

Innate power of NK cells to identify and kill transformed cells

Low risk of GvHD

Low risk of CRS and neurotoxicity

Predictable pharmacokinetics

Therefore

Highly active, cytotoxic cells as foundation and starting material

Naturally allogeneic

Potential for routine administration and broad outpatient access

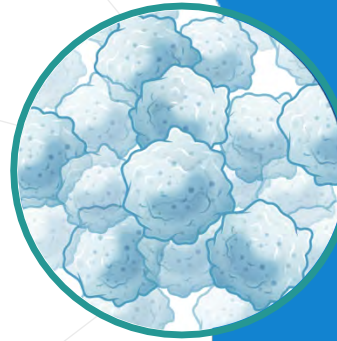
Potential for flexible multi-dose and multi-cycle treatment

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

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

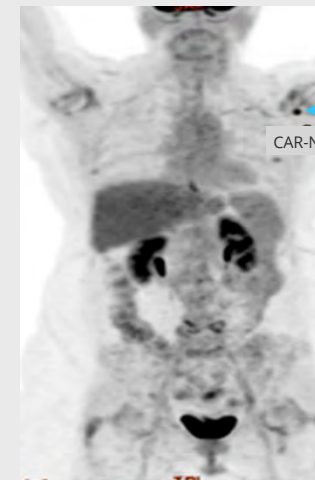
CRs in advanced B cell
malignancies

No reported CRS,
GvHD or
neurotoxicity

PRE-TREATMENT



DAY 30 POST CAR-NK



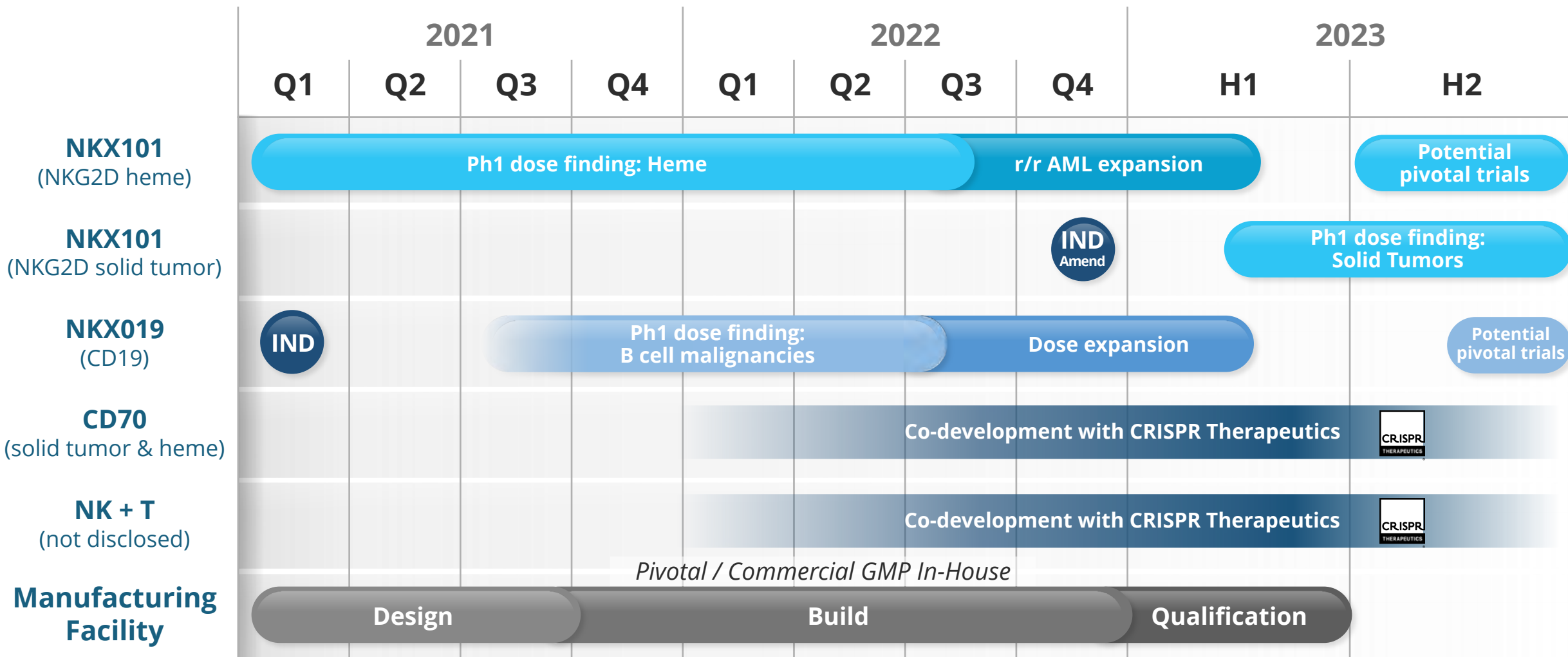
Patient achieved CR.
CAR-NK cells traffic
to sites of disease



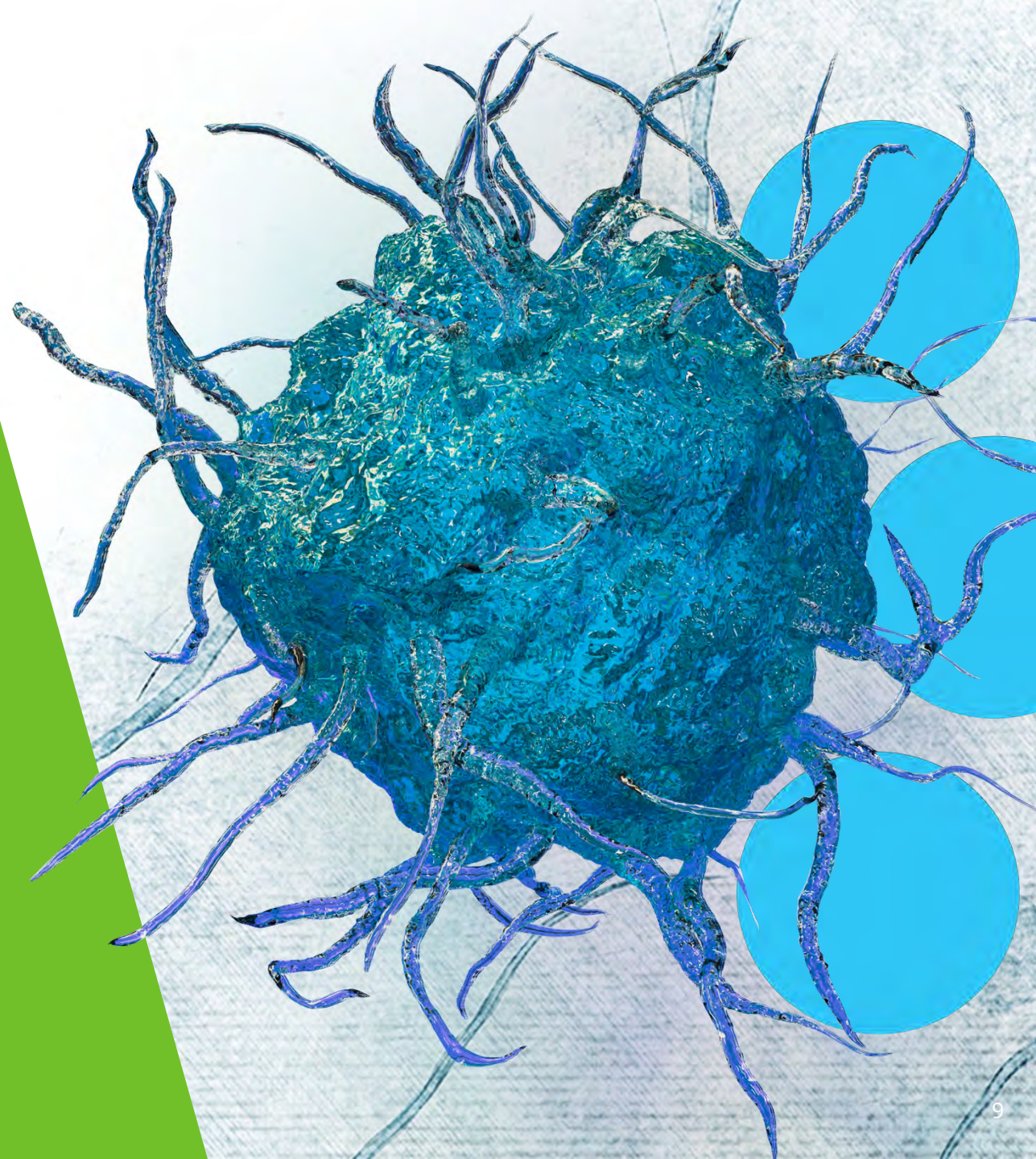
Update: ASH 2020

Activity and tolerability of engineered NK
cells in multiple clinical studies

Platform-driven pipeline with multiple upcoming milestones



Platform



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

FEATURE	CELL SOURCE		
	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**

Cryopreservation

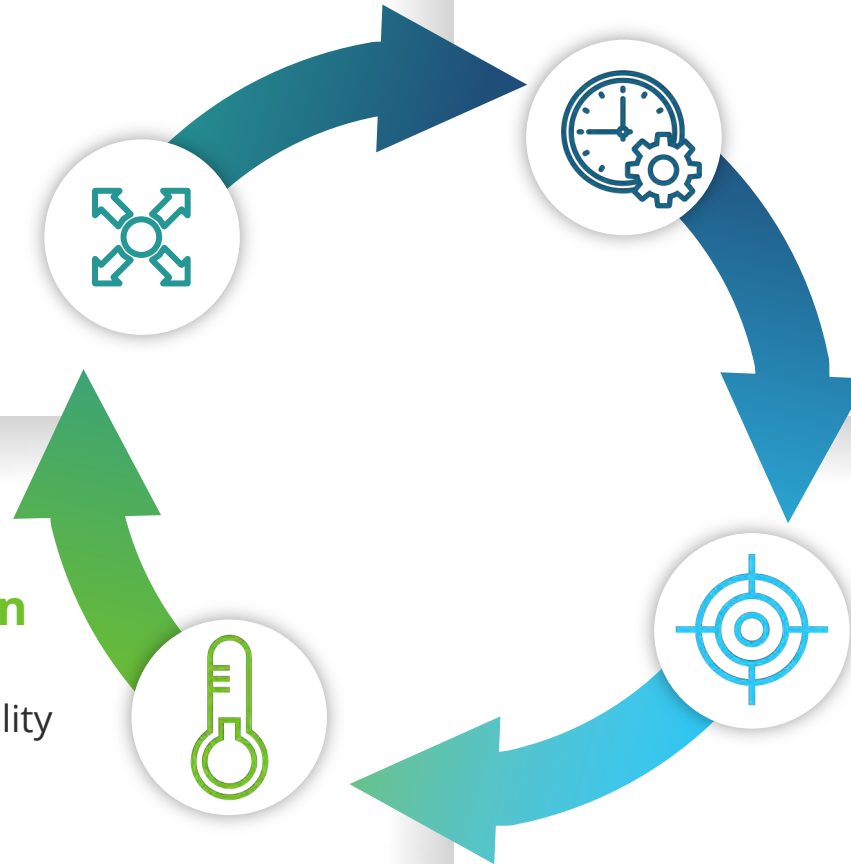
Freezing process maintains NK cell viability and potency to enable true **off-the-shelf cell product**

Persistence

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

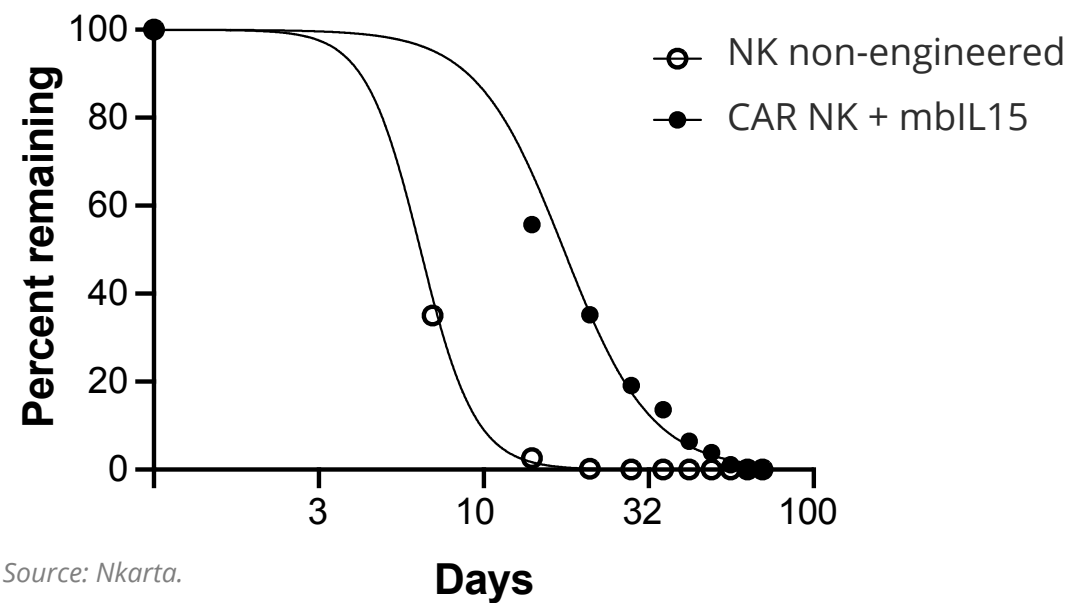
Targeting

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



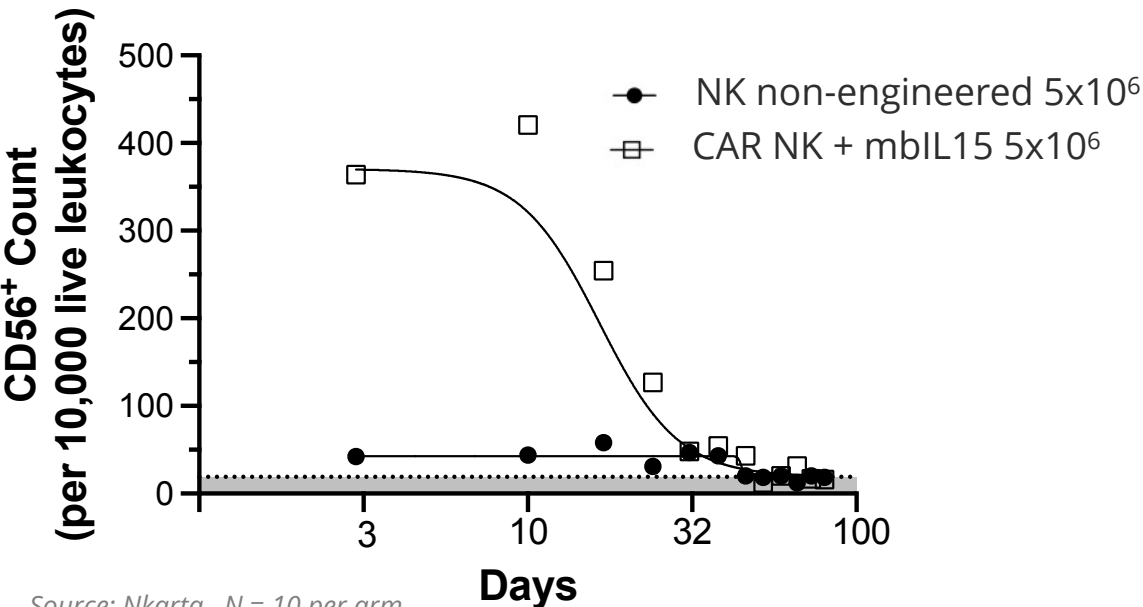
Superior NK cell persistence from membrane bound IL-15

IN VITRO PERSISTENCE



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

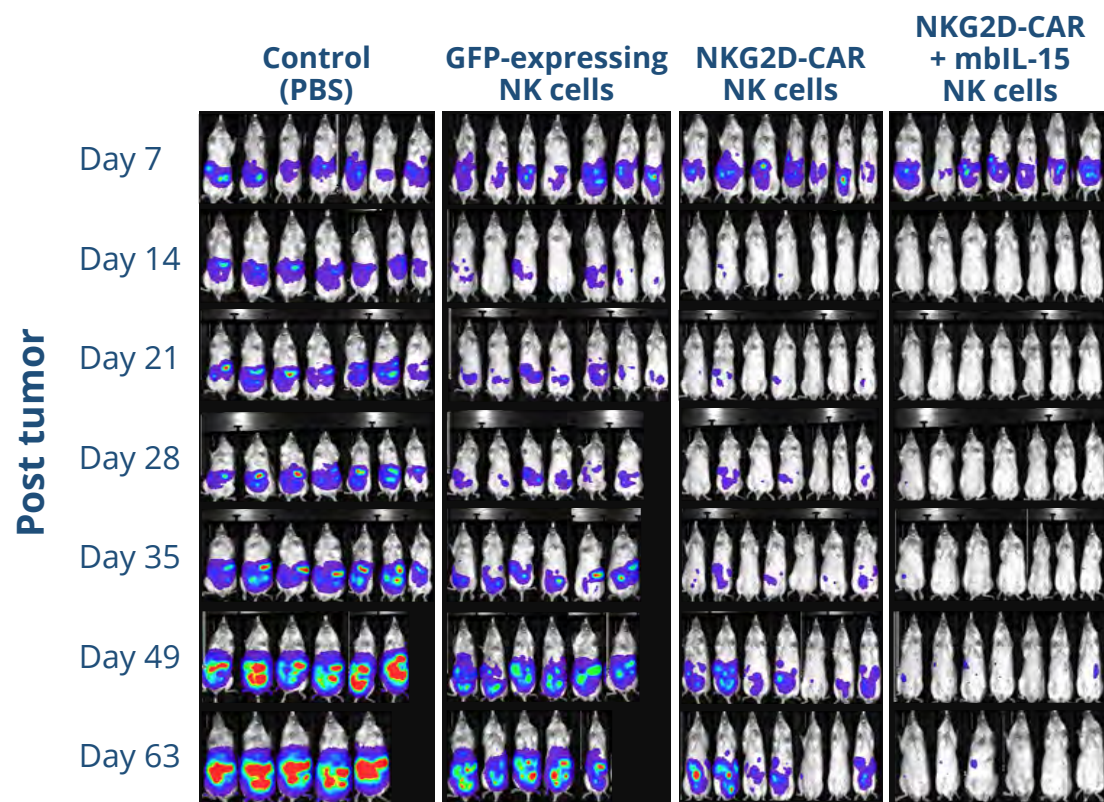
IN VIVO PERSISTENCE AND EXPANSION IN NSG MICE



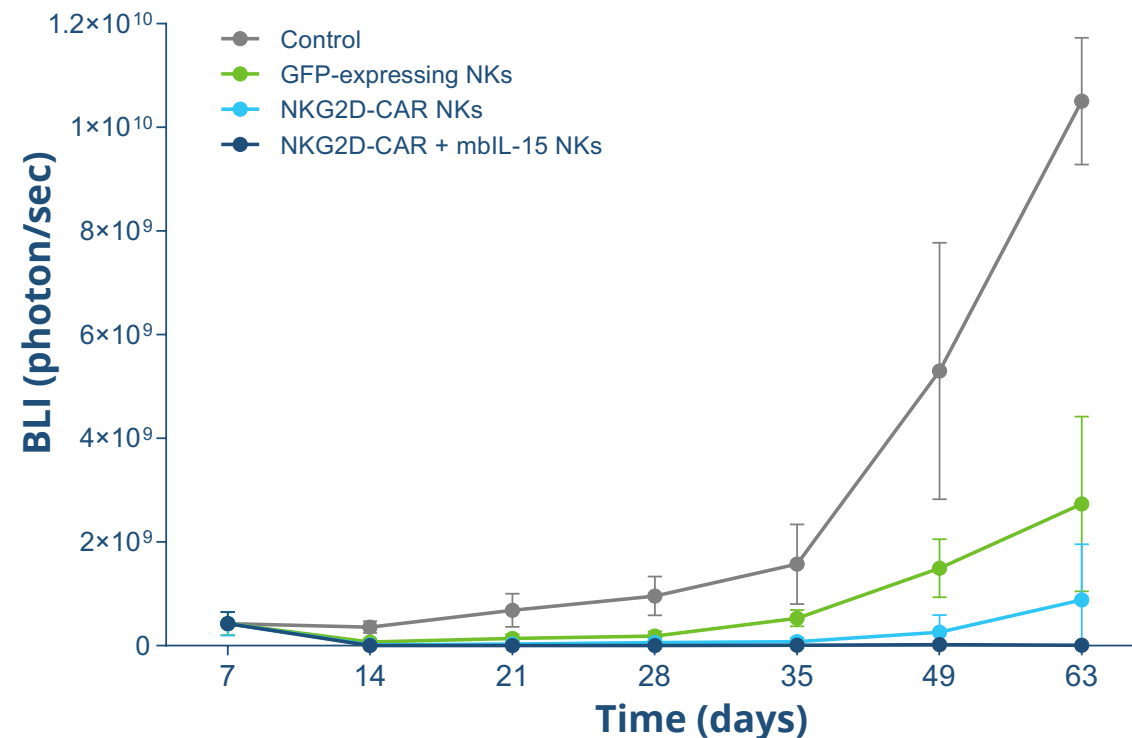
7-fold increase in exposure observed in vivo with a single administration

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

Persistence and targeting to maximize anti-tumor activity

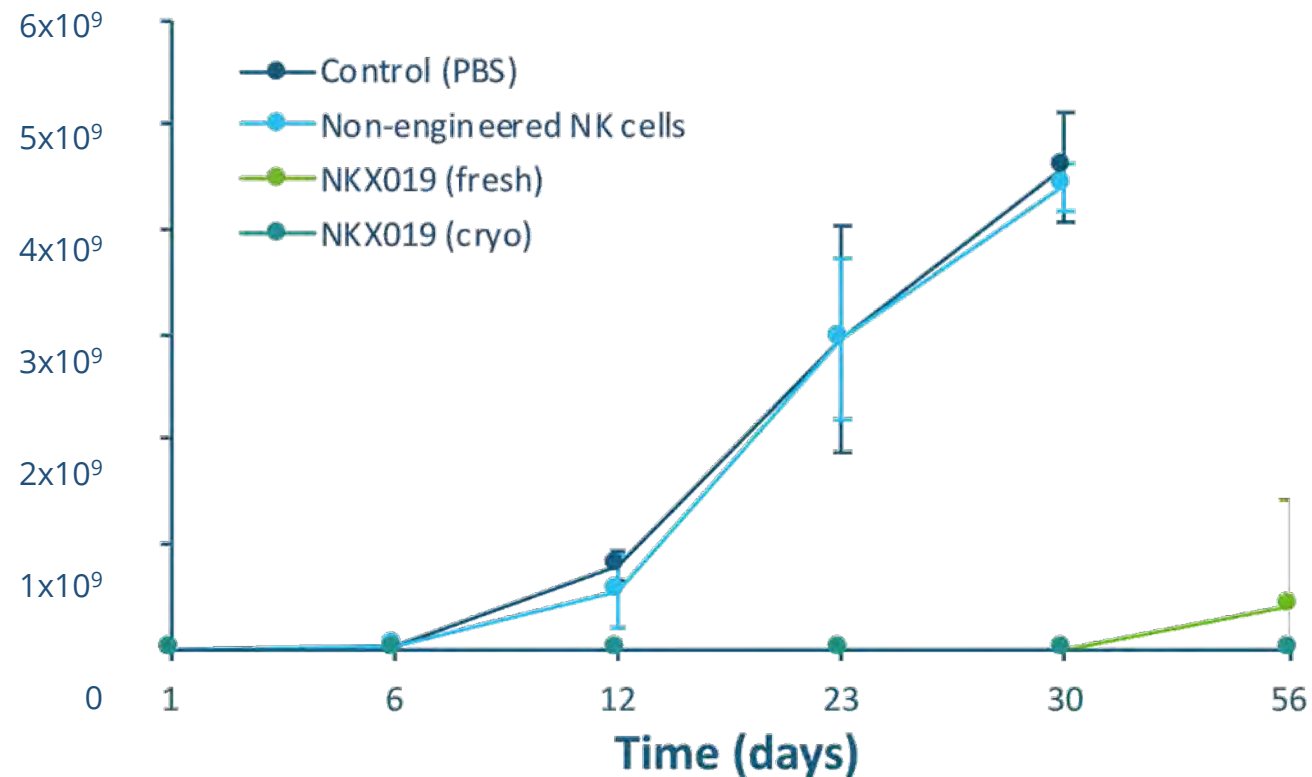
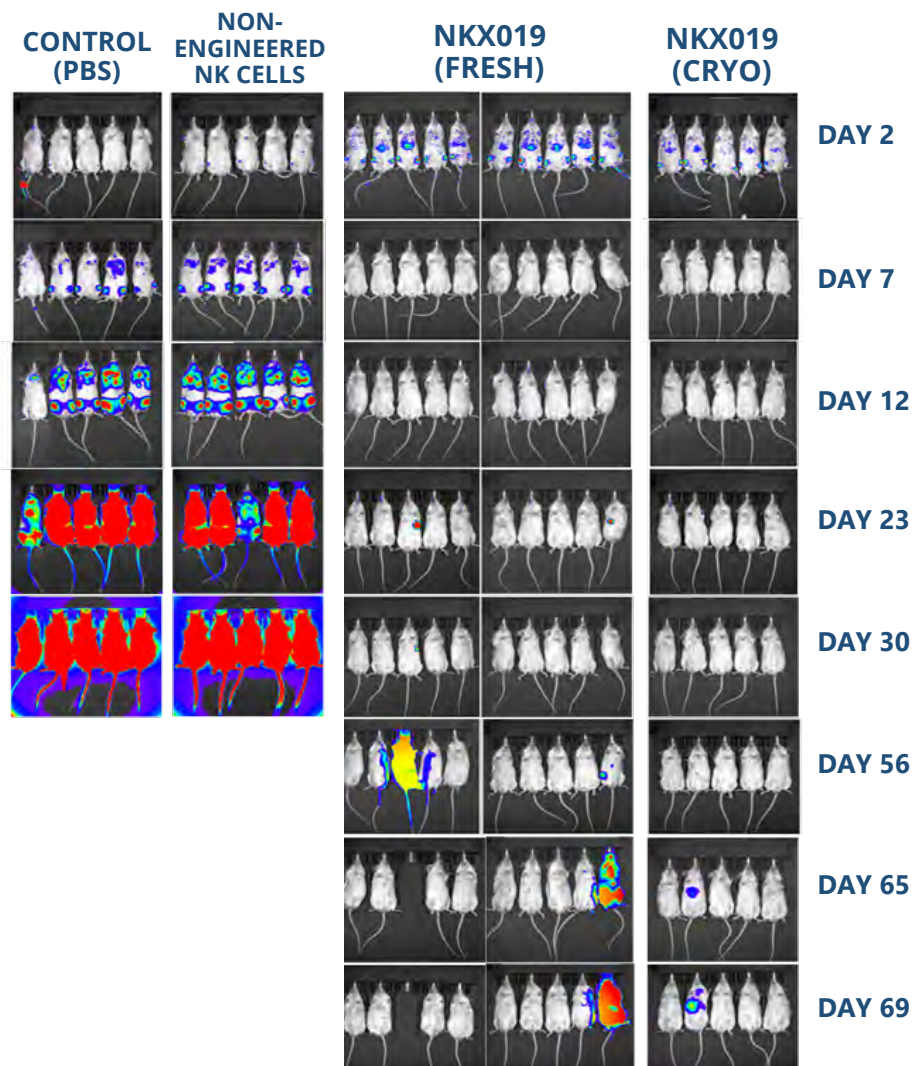


Source: Nkarta. U2OS osteosarcoma model; 3×10^6 NK cells administered on D7. Graphical data at right are average BLI of mice above.



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

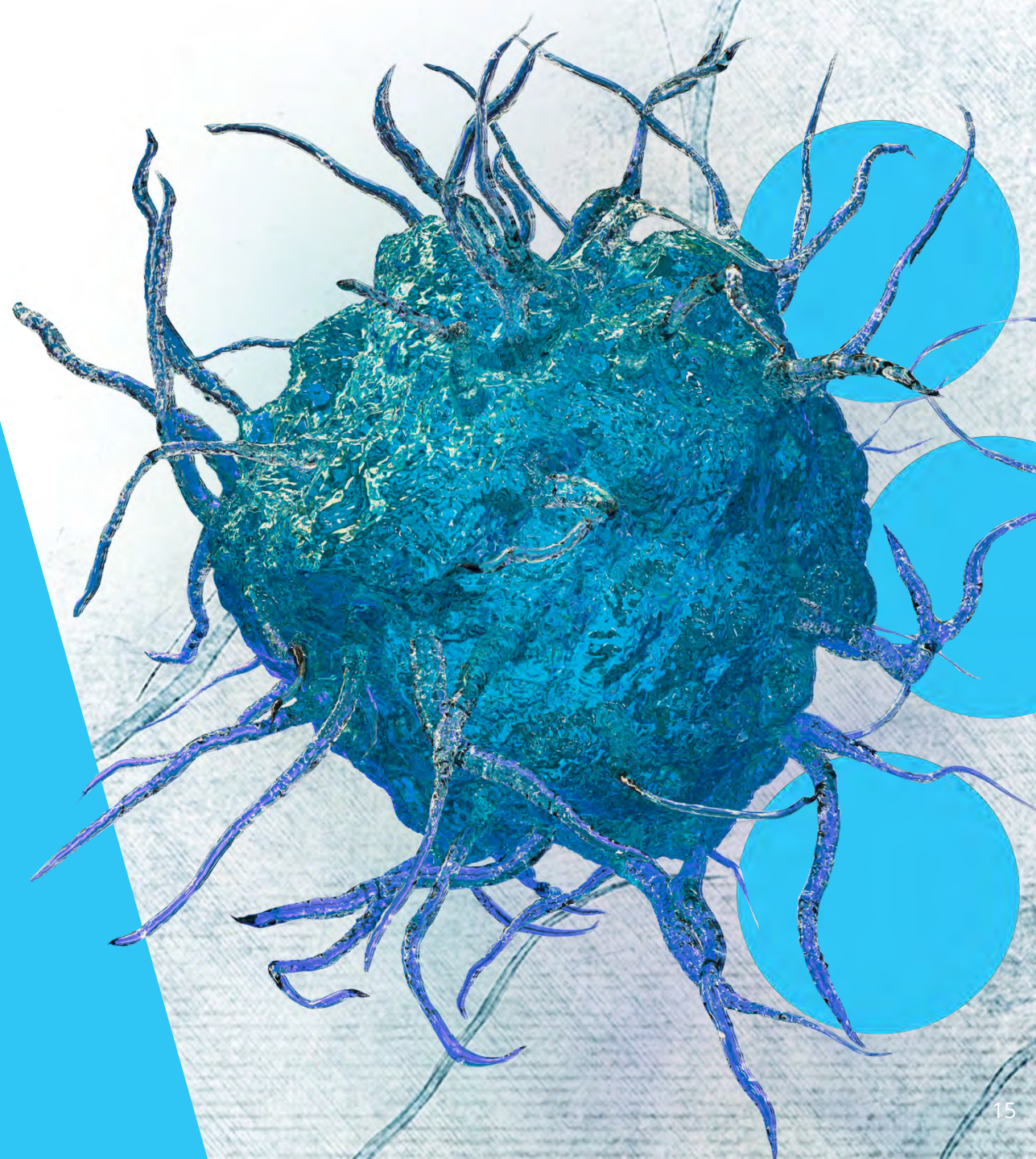
Our cryopreserved products are highly cytotoxic



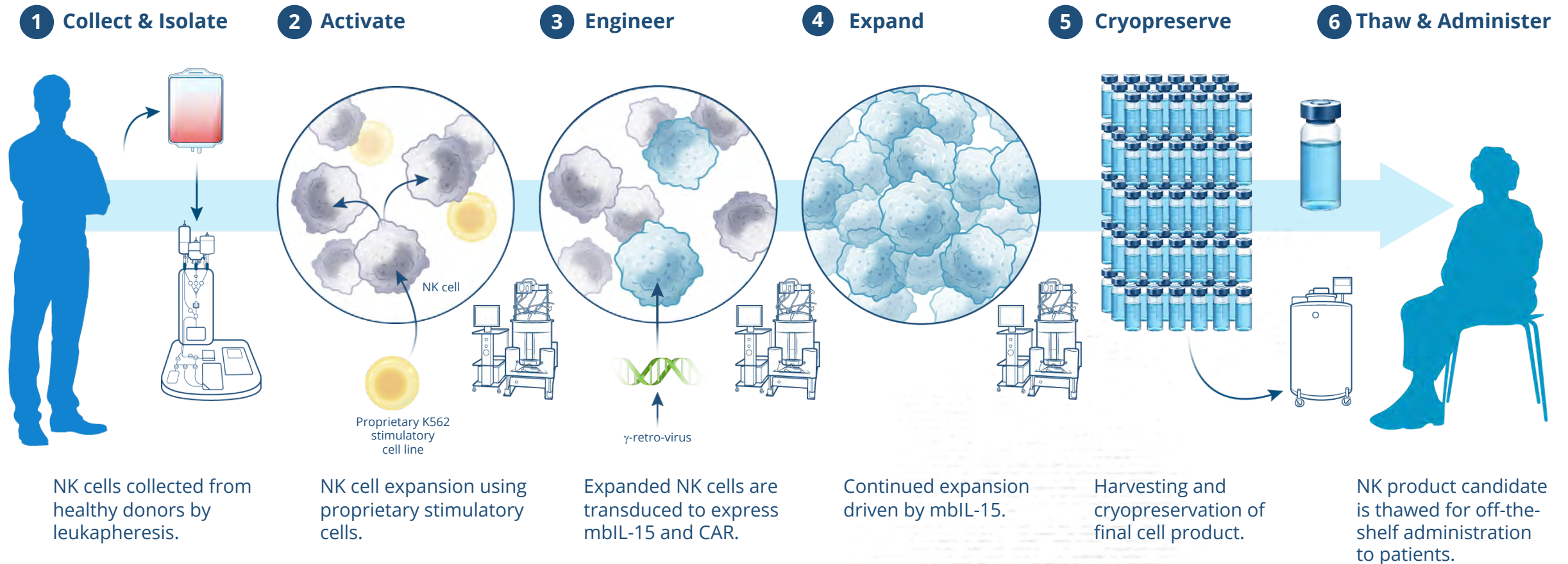
Nalm-6 lymphoma model. 107 cells administered one day post tumor. Graphical data above are an average of mouse luminescence at left. "Cryo" denotes cryopreserved then thawed NKX019.

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

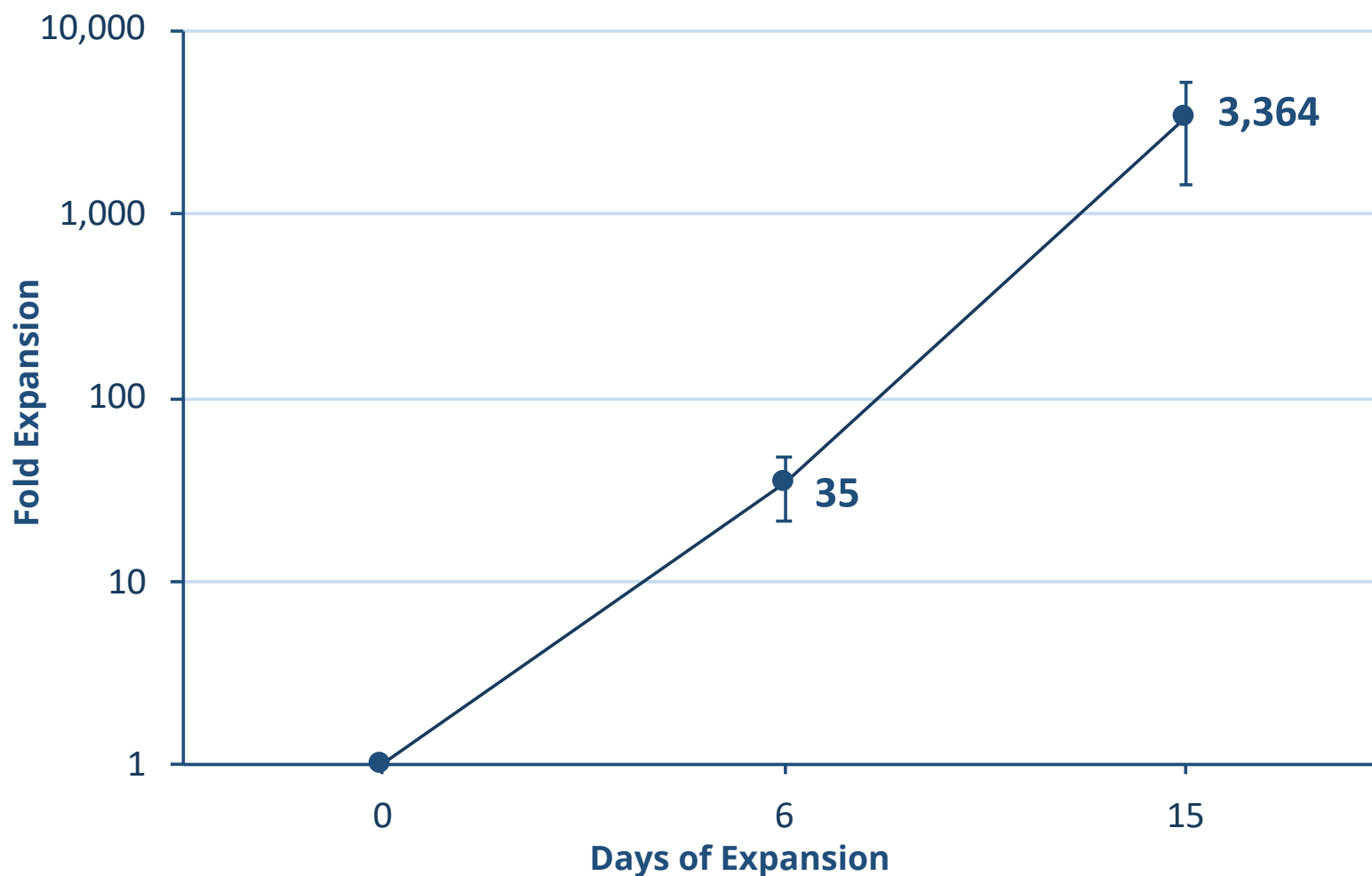
Manufacturing



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



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*



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

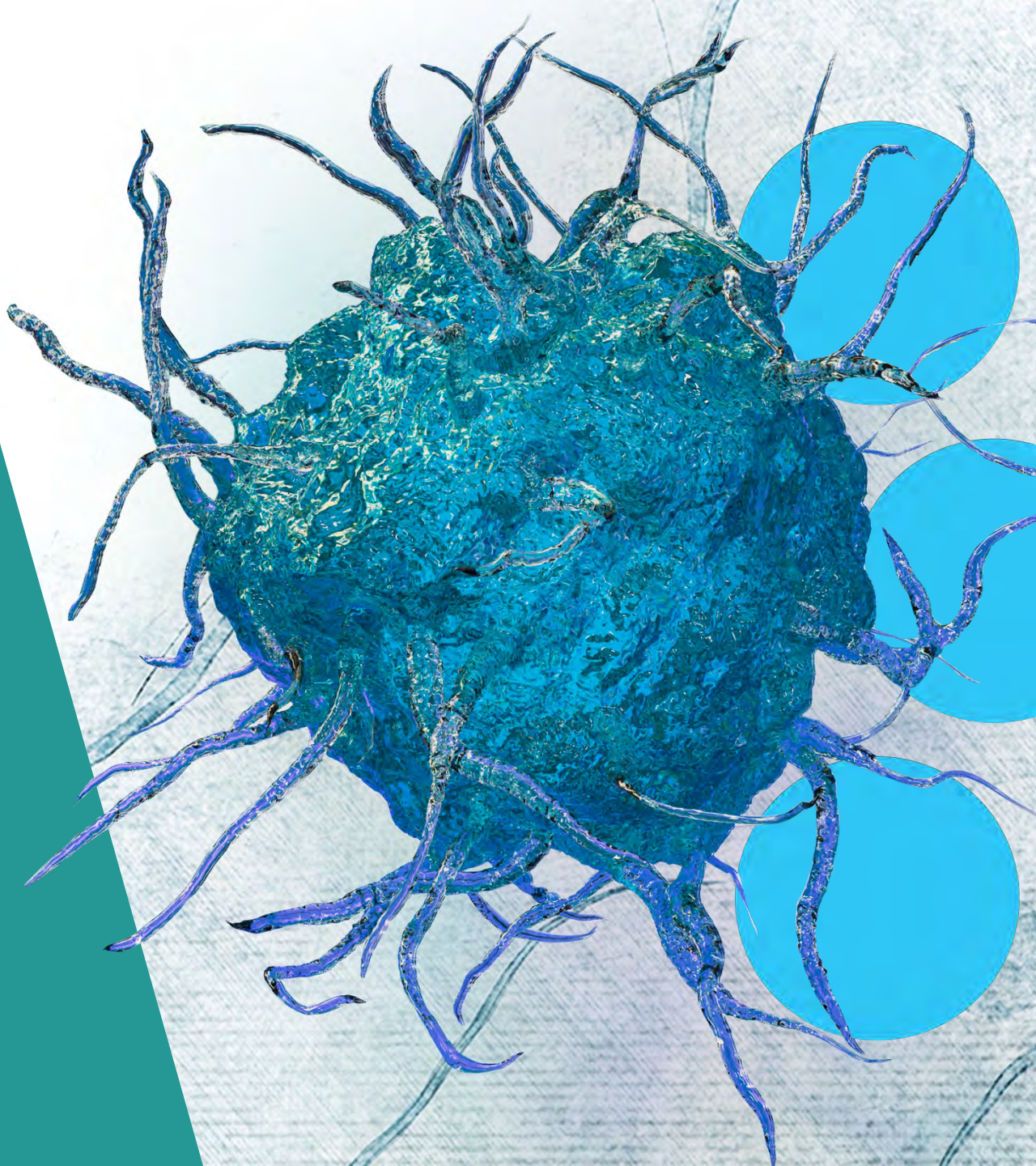
FUTURE COMMERCIAL-SCALE FACILITY

Design and engineering process initiated

Facility expected to supply pivotal trials of NKX101 and NKX019

Modular design for future expansion to meet commercial demands

Pipeline



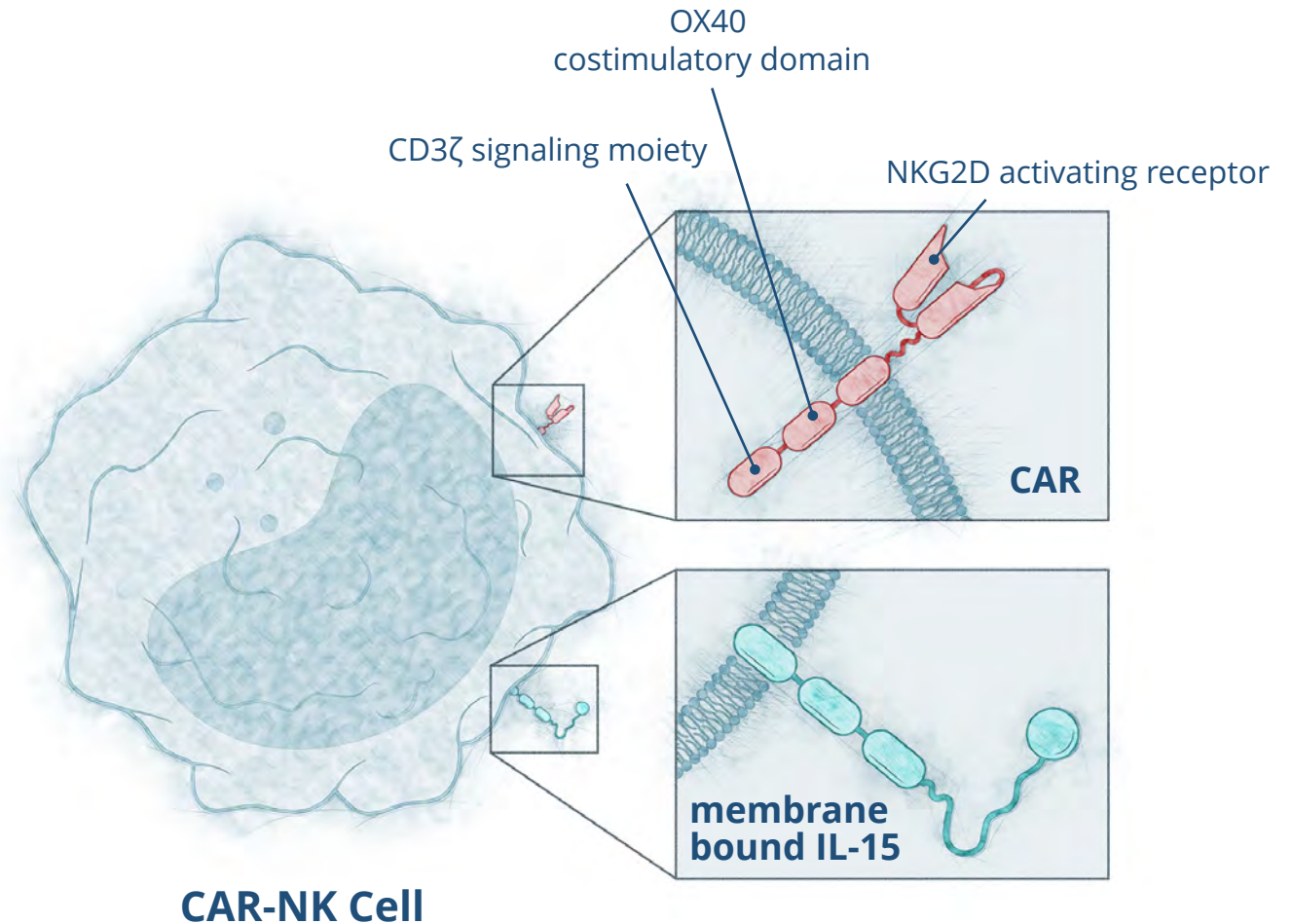
NKX101: CAR-NK targeting NKG2D ligands

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



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, <i>J Immunol</i> 2012
MULTIPLE MYELOMA	Carbone, <i>Blood</i> 2005
HCC	Kamimura, <i>J Hep</i> 2012
BREAST	de Kruijf, <i>BMC Can</i> 2012
OVARIAN	McGilvray, <i>Int J Can</i> 2010
LUNG	Okita, <i>Can Imm Immunother</i> 2016
COLON	McGilvray, <i>CCR</i> 2009
MELANOMA	Vetter, <i>J Inv Derm</i> 2002
OSTEOSARCOMA	Lu, <i>Neoplasma</i> 2008
GLIOMA	Weiss, <i>CCR</i> 2018

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

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

NKX101: Rationale in acute myeloid leukemia (AML)

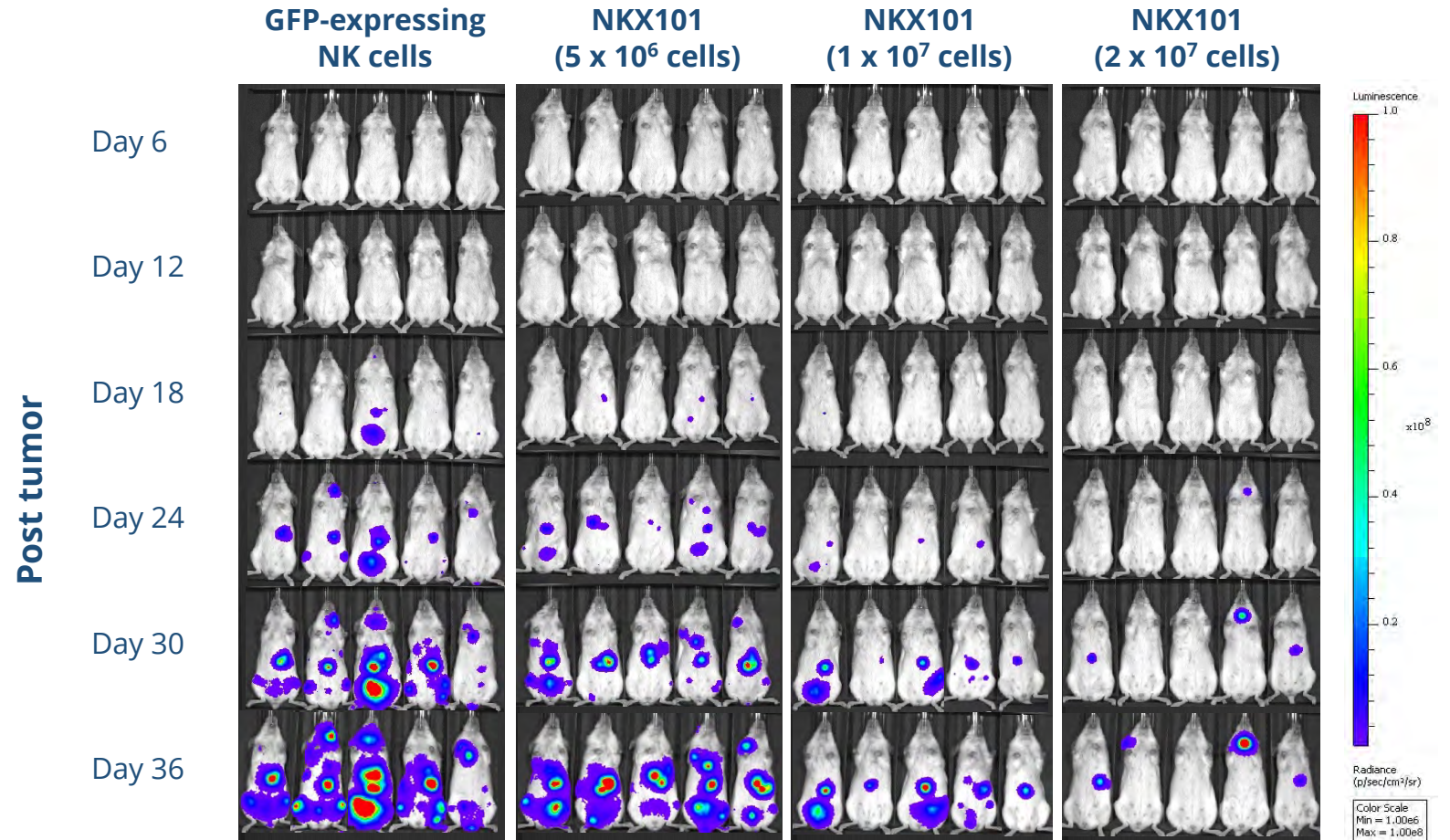
**NKG2D TARGETS
ARE OVER-EXPRESSED**
in AML blasts

CLINICAL ACTIVITY
with non-engineered NKs

UNMET NEED:

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

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



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

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

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



NKX101 demonstrates anti-tumor activity in solid tumors

**LIVER & BILE CANCER US
INCIDENCE: ~42K / YR**

5-year survival rate ~18%

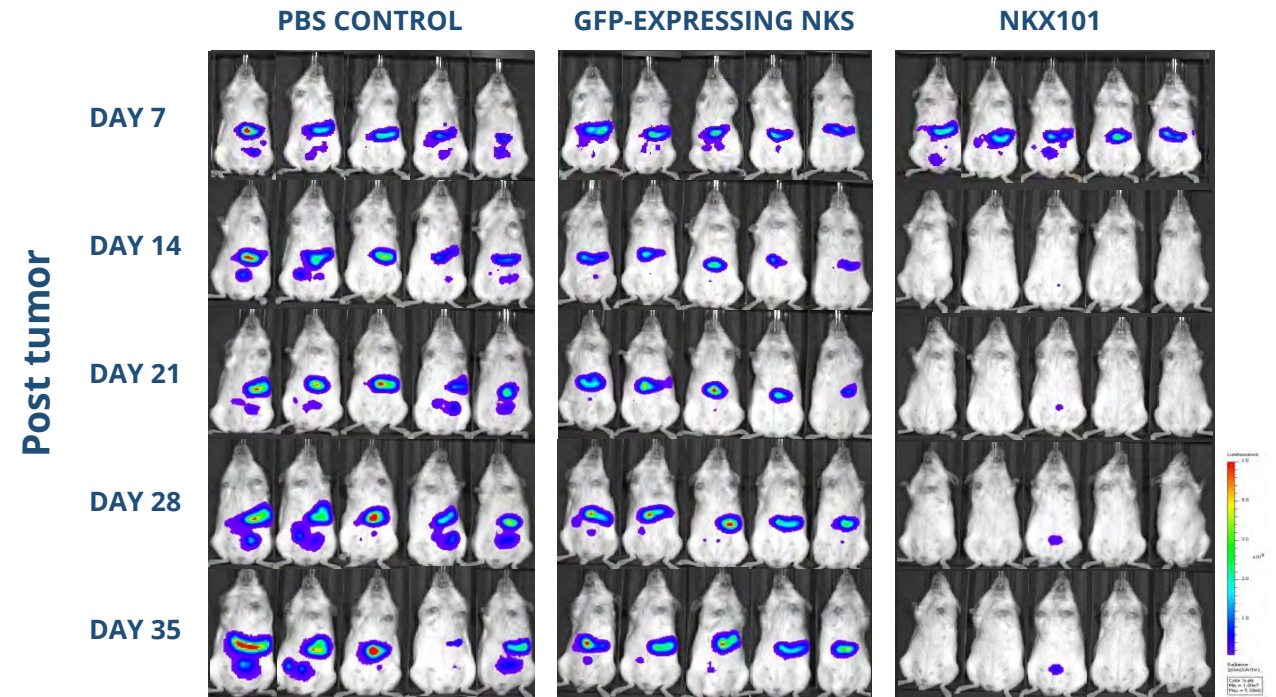
NKG2D TARGETS OVER-EXPRESSED
on HCC and CRC cells

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 10⁶ 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

NKX019: CD19 targeted CAR-NK

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

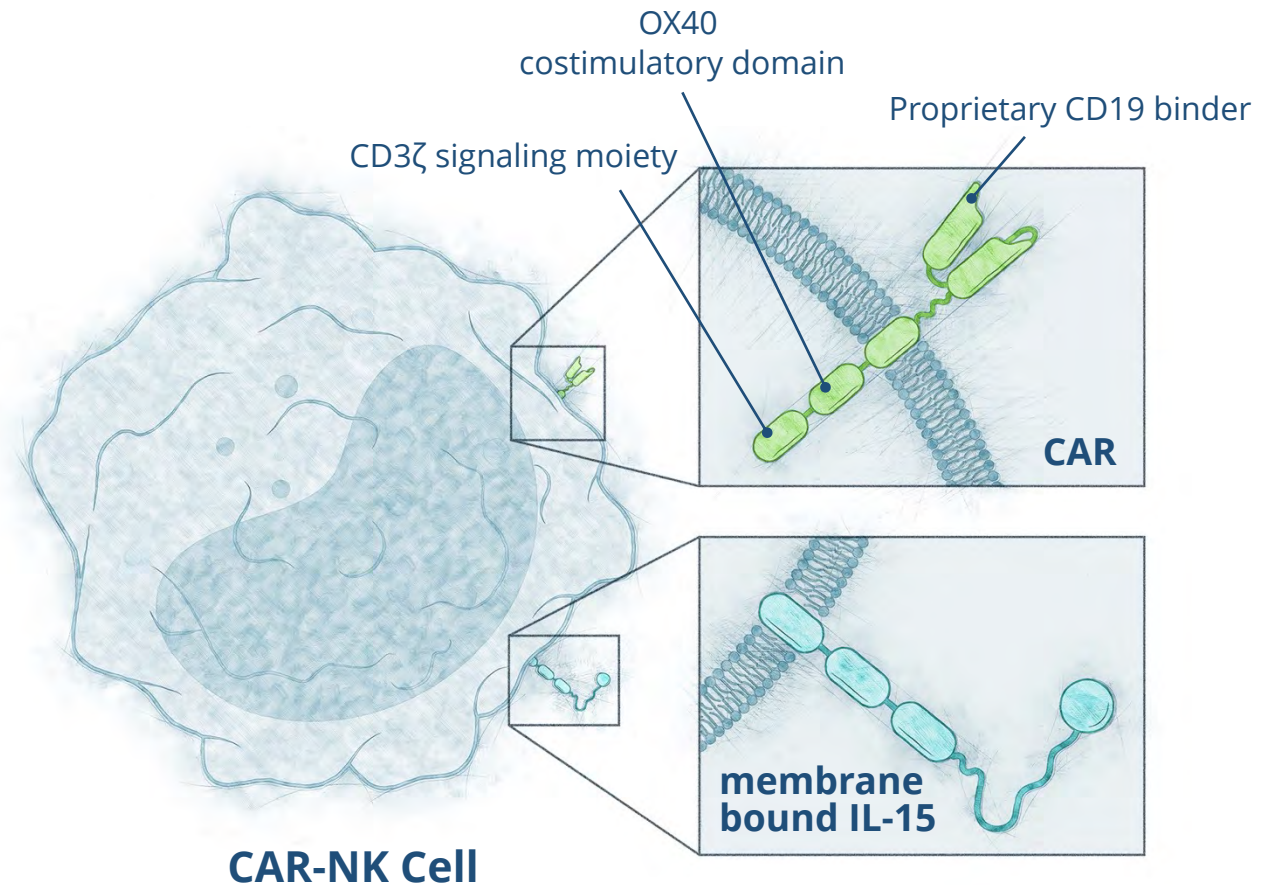
- Gr3+ CRS: 13–49%; Gr3+ neurotoxicity: 18–31%
- Limited number of specialized sites can treat
- 9–34% of patients in pivotal trials didn't receive cells (primarily due to mfg. challenges)

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

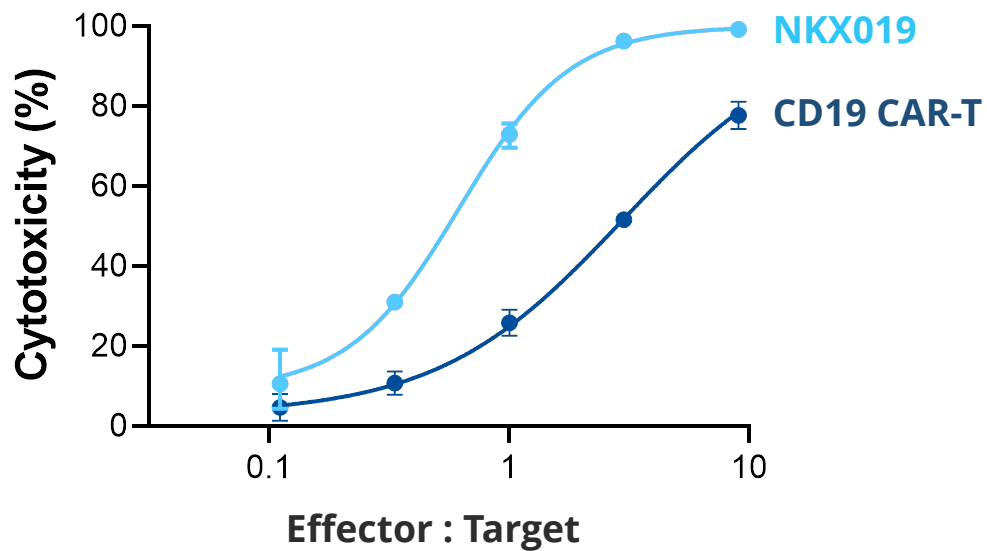
PATIENT DOSING EXPECTED TO START IN 2H 2021

- Phase 1 in B cell malignancies

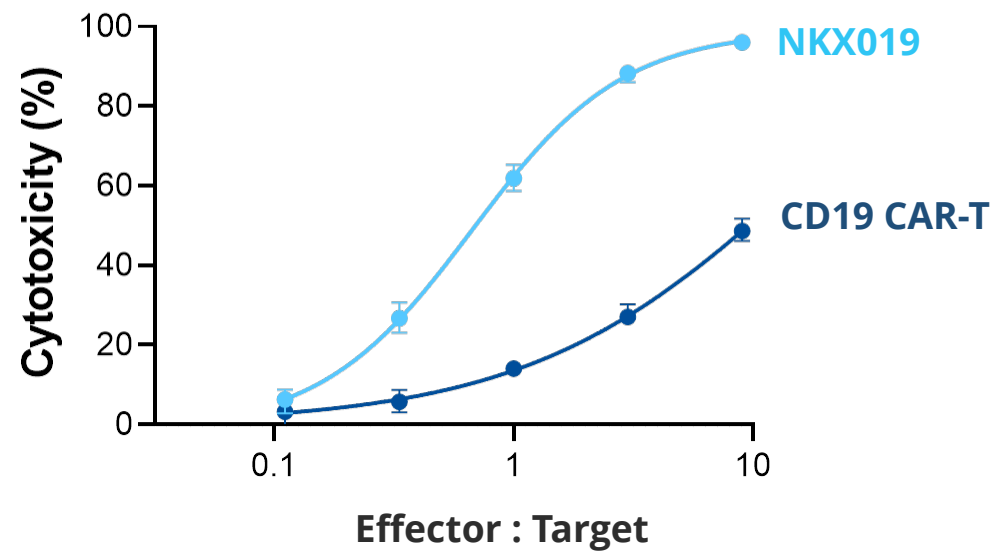


NKX019 kills tumors with high or low levels of CD19 expression

High CD19 Expressing Cells



Low CD19 Expressing Cells

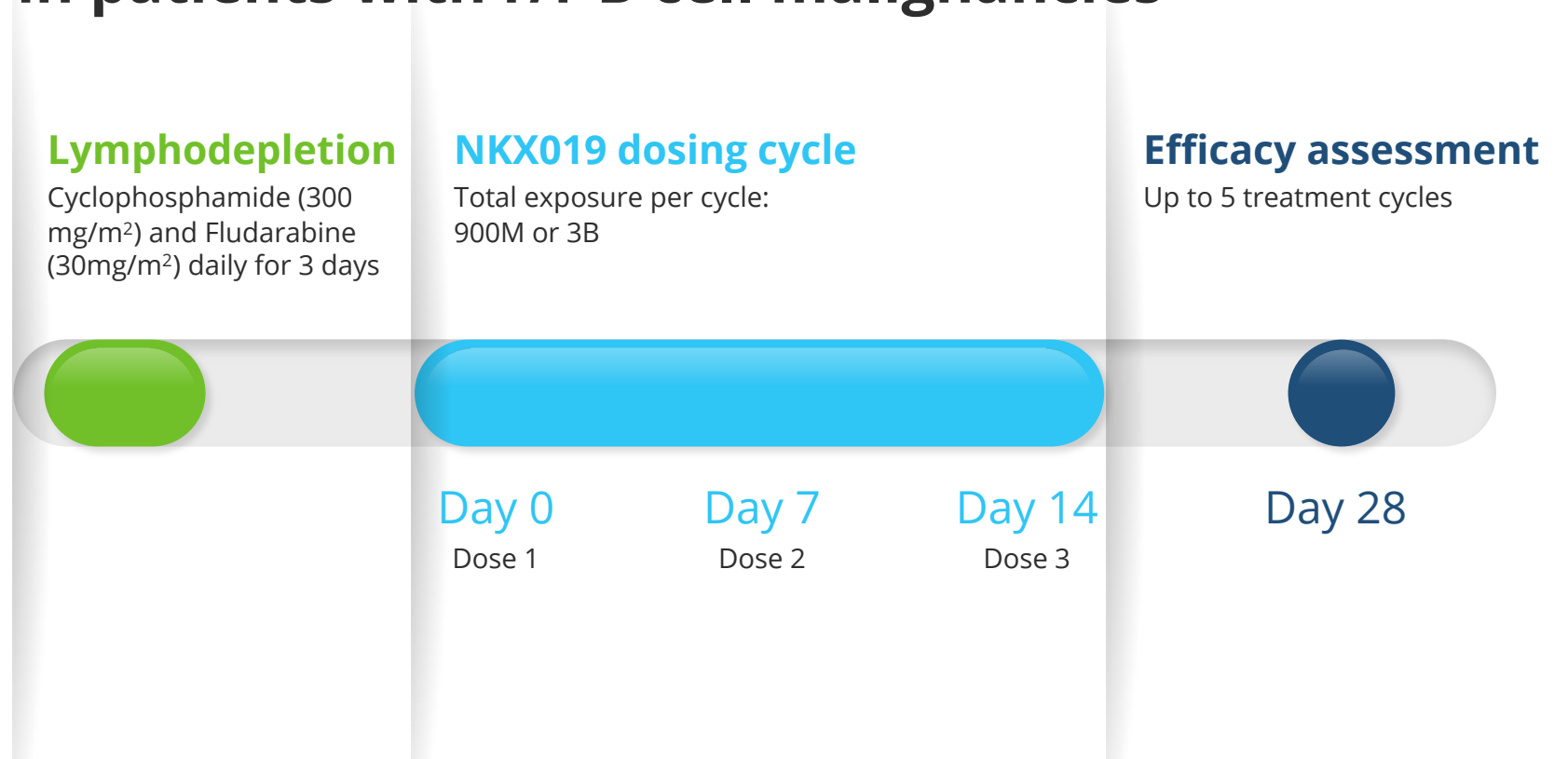


NKX019 can achieve high levels of cytotoxicity even when tumor cells express low levels of CD19 antigen, whereas CD19-targeted T cells are not as efficacious

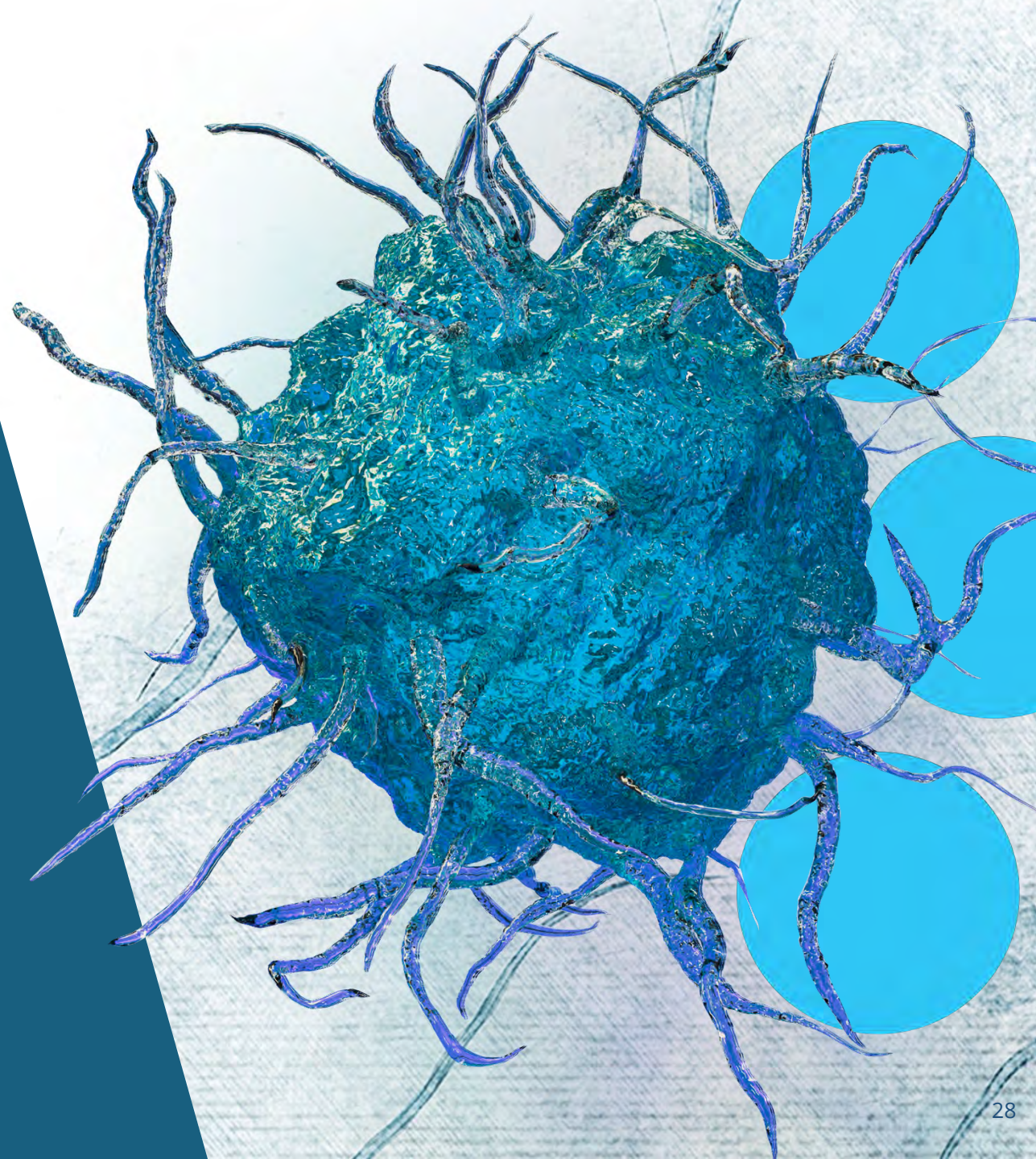
NKX019 Trial Design

- 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

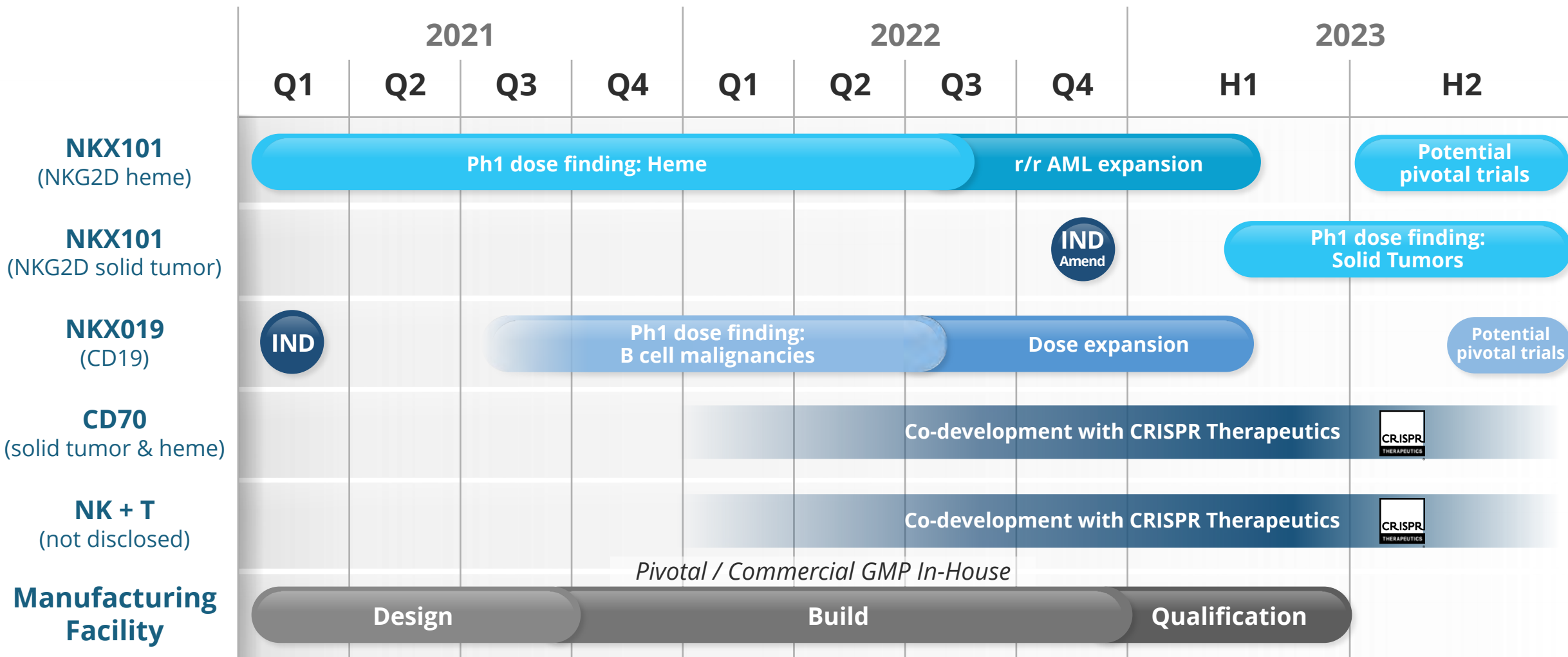
Single-arm multi-center Phase 1 study evaluating safety and efficacy of NKX019 in patients with r/r B cell malignancies



Corporate



Platform-driven pipeline with multiple upcoming milestones



Pioneering the next revolution in cell therapy

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

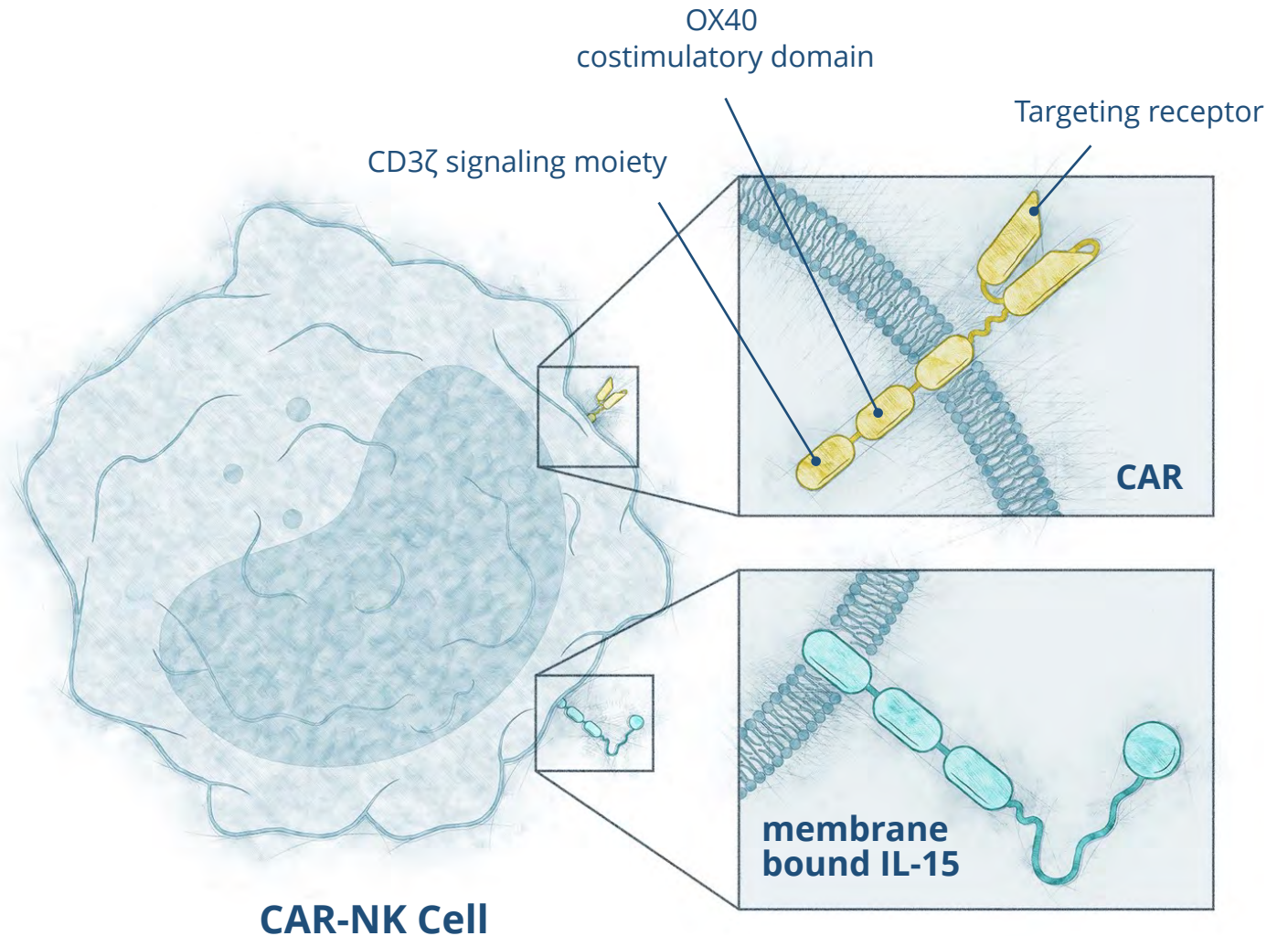
Allogeneic and off-the-shelf products

Industrialized manufacturing

Developed for outpatient administration

Co-lead programs

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



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

Thank you!

