



# Precigen, Inc.

January 11, 2023

Helen Sabzevari, PhD

President & Chief Executive Officer

41<sup>st</sup> Annual J.P. Morgan Healthcare Conference

PRECIGEN

Some of the statements made in this presentation are forward-looking statements. These forward-looking statements are based upon the Company's current expectations and projections about future events and generally relate to plans, objectives, and expectations for the development of the Company's business, including the timing and progress of preclinical studies, clinical trials, discovery programs and related milestones, the promise of the Company's portfolio of therapies, and in particular its CAR-T and AdenoVerse therapies. Although management believes that the plans and objectives reflected in or suggested by these forward-looking statements are reasonable, all forward-looking statements involve risks and uncertainties, including the possibility that the timeline for the Company's clinical trials might be impacted by the COVID-19 pandemic, and actual future results may be materially different from the plans, objectives and expectations expressed in this presentation. The Company has no obligation to provide any updates to these forward-looking statements even if its expectations change. All forward-looking statements are expressly qualified in their entirety by this cautionary statement. For further information on potential risks and uncertainties, and other important factors, any of which could cause the Company's actual results to differ from those contained in the forward-looking statements, see the section entitled "Risk Factors" in the Company's most recent Annual Report on Form 10-K and subsequent reports filed with the Securities and Exchange Commission.

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# Precigen is Deploying Novel Gene & Cell Therapeutic Approaches to Address High Unmet Healthcare Needs



- Non-viral multi-gene delivery
- Non-exhausted, stem-like T cell phenotype
- Higher antigen-specific expansion
- Enhanced *in vivo* persistence
- Ability to deplete with kill switch
- Overnight manufacturing process



- Large payload capacity
- Low seroprevalence in humans
- Ability for repeat administration
- Durable antigen-specific immune response
- Highly productive manufacturing process

ADENOVERSE  
IMMUNOTHERAPY

| PRODUCT   | PLATFORM   | INDICATION                                 | DISCOVERY | PRECLINICAL | PHASE 1 | PHASE 1B | PHASE 2 | PHASE 3 |
|-----------|------------|--|-----------|-------------|---------|----------|---------|---------|
| PRGN-2009 | AdenoVerse | HPV+ Solid Tumors                          |           |             |         |          |         |         |
| PRGN-2012 | AdenoVerse | Recurrent Respiratory Papillomatosis (RRP) |           |             |         |          |         |         |

ULTRACAR-T

| PRODUCT   | PLATFORM   | INDICATION                         | DISCOVERY | PRECLINICAL | PHASE 1 | PHASE 1B | PHASE 2 | PHASE 3 |
|-----------|------------|------------------------------------|-----------|-------------|---------|----------|---------|---------|
| PRGN-3005 | UltraCAR-T | Ovarian Cancer                     |           |             |         |          |         |         |
| PRGN-3006 | UltraCAR-T | AML, MDS                           |           |             |         |          |         |         |
| PRGN-3007 | UltraCAR-T | ROR1+ Hematological & Solid Tumors |           |             |         |          |         |         |

ACTOBIOTICS

| PRODUCT | PLATFORM    | INDICATION      | DISCOVERY | PRECLINICAL | PHASE 1 | PHASE 1B | PHASE 2 | PHASE 3 |
|---------|-------------|-----------------|-----------|-------------|---------|----------|---------|---------|
| AG019   | ActoBiotics | Type 1 Diabetes |           |             |         |          |         |         |

# Precigen in 2022: Significant Clinical and Fiscal Accomplishments

|   |  |   |
|---|--|---|
| ✓ | PRGN-3006<br>UltraCAR-T                  | Presented positive safety and efficacy Phase 1 data at ASH; Activated Mayo Clinic (MN) as expansion site for the Phase 1b trial enhancing the decentralized manufacturing model; FDA clearance received for redosing; FDA granted Fast Track designation          |
| ✓ | PRGN-3005<br>UltraCAR-T                  | Completed enrollment in Phase 1 clinical trial; Initiated Phase 1b expansion trial; FDA clearance received for redosing; Tech transfer underway for expansion to major US cancer centers  |
| ✓ | PRGN-3007<br>Next Gen<br>UltraCAR-T      | Tech transfer complete for initiation of the Phase 1 umbrella trial in ROR1 <sup>+</sup> hematological (CLL, MCL, ALL, DLBCL) and solid tumors (TNBC); Phase 1 trial open for enrollment  |
| ✓ | PRGN-2012<br>AdenoVerse<br>Immunotherapy | Completed enrollment (N=15) in Phase 1 trial in recurrent respiratory papillomatosis; Phase 2 trial initiated and rapidly enrolling patients (N=20 enrolled to date); Announced upcoming presentation of complete Phase 1 safety and efficacy data (January 24th) |
| ✓ | PRGN-2009<br>AdenoVerse<br>Immunotherapy | Enrollment and dosing complete in the Phase 1 mono (N=6) and combo therapy (N=11) in HPV-associated cancers; Enrollment ongoing in Phase 2 mono arm in newly diagnosed oropharyngeal squamous cell carcinoma (OPSCC) with 19 of 20 enrolled as of end of 2022     |
| ✓ | Corporate                                | Maximized value of Trans Ova Genetics leading to sale of non-health subsidiary for \$170M upfront and a potential \$10M earn-out  |
| ✓ | Corporate                                | Retired ~\$157M of the outstanding convertible notes due in July 2023 in a non-dilutive manner, resulting in \$5.7M in interest and discount savings as of the end of 2022  |

LEGEND: ✓ goal met; ✓ goal expected Q1 23





# UltraCAR-T<sup>®</sup> Platform

Overview & Differentiation

## Evaluate Vantage

December 11, 2022



Jacob Plieth

### Ash 2022 – fast production fails to cure Car-T's problem<sup>1</sup>

Novartis and Gracell's two-day manufactured Cars do not solve cell therapy's biggest bottleneck – yet.

Data presented at Ash by Novartis and Gracell suggested that manufacturing time can be cut drastically, from a few weeks to two days, but **the elephant in the room remains: patients still have to wait weeks or months before they receive therapy.**

### How long?

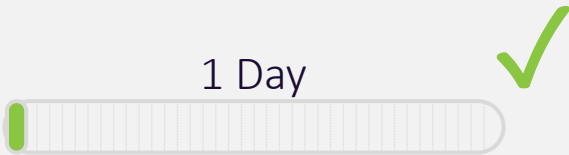

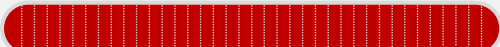
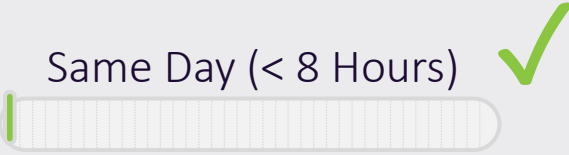



This shortcoming was laid bare at Sunday's Ash session when the presenter, Dr Pere Barba of Vall d'Hebron University Hospital, **repeatedly dodged questions about what the vein-to-vein time** was in a phase 1 lymphoma study of the T-Charge-manufactured YTB323 (rapcabtagene autoleucel).

After insisting that a clinical trial setting was suboptimal to assess this, Dr Barba eventually admitted that **vein-to-vein time – the time taken from apheresis to cell reinfusion – was “similar” to the industry norm for autologous Car-T therapies, implying two to six weeks.**

This is only part of the problem. Current capacity constraints mean that, once a patient is deemed a candidate for Car-T therapy, it then takes weeks before a slot can be booked for their cells to be manufactured. **Dr Barba said some patients were kept waiting for so long that they had to be bridged with chemo, and indeed some went into remission as a result....**

Dr Barba presented a swimmers plot of responses that **pointedly omitted patients' time between enrolment and dosing**. This was shown to be between two and three months, with one patient waiting as long as six months. Against this backdrop shaving a week or two off manufacturing time seems paltry.

Precigen’s UltraCAR-T is the **Leading Platform** to Significantly Reduce Manufacturing and Treating Time for Autologous CAR-T **to Just One Day**

|   | UltraCAR-T  | Autologous CAR-T   | Allogeneic CAR-T/NK <sup>#</sup>  |
|---|---|--|---|
| Manufacturing                           | 1 Day                 | Up to 4 Weeks*  | 4+ Weeks*  |
| Quality Control Release Assays          | Same Day (< 8 Hours)  | 2 to 4 Weeks*   | 4+ Weeks*  |
| Expected Per Patient Manufacturing Cost | \$\$                | \$\$\$\$\$   | \$\$\$  |

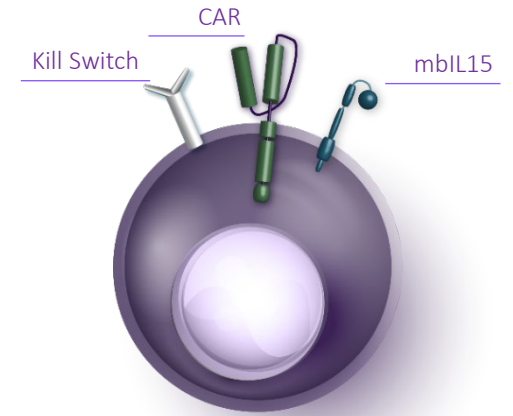
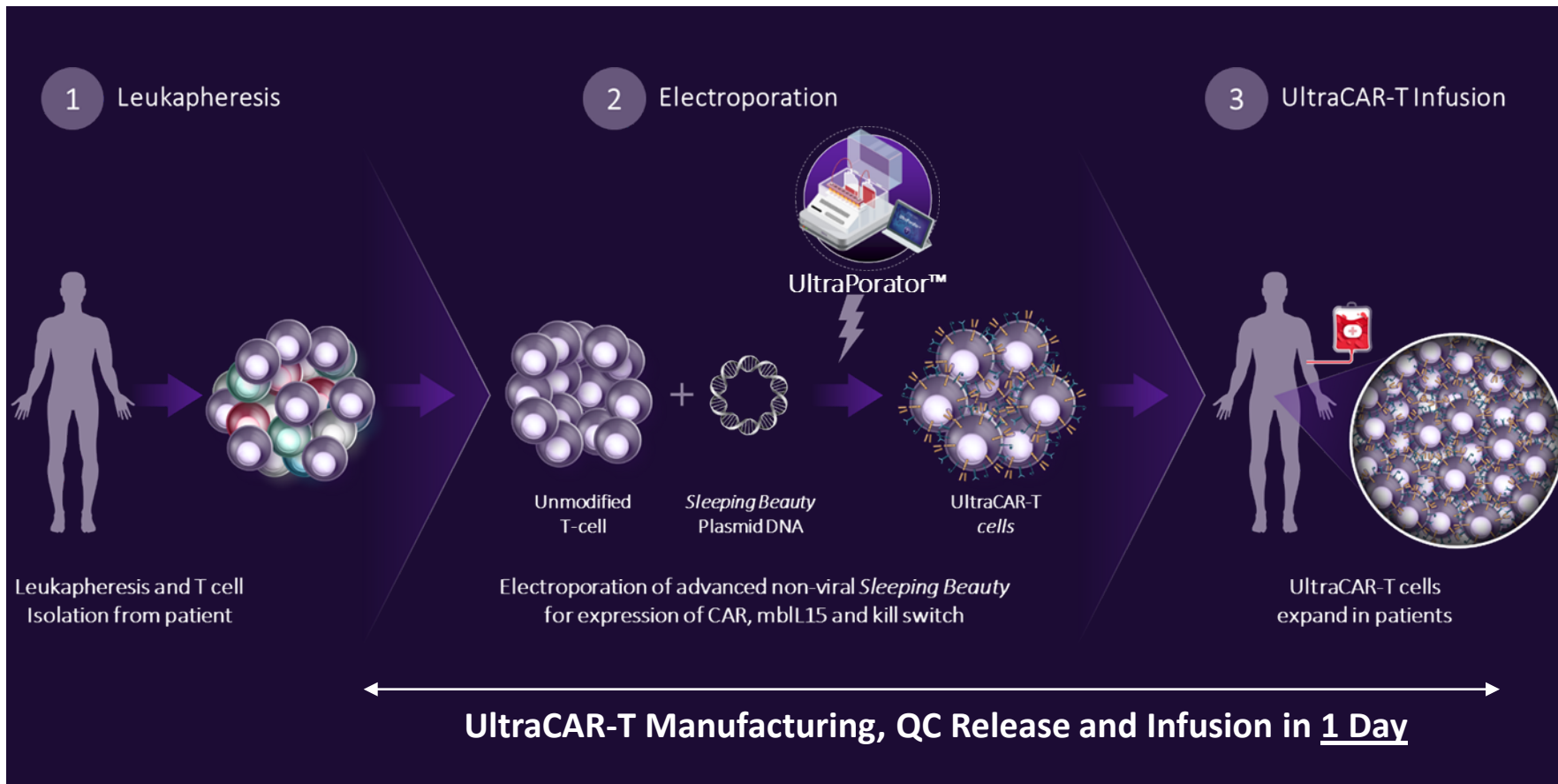
The information presented in this table is based on our internal assessment of the state of general development of such technologies

\*Estimated based on publicly available information

<sup>#</sup>Each batch of Allogeneic CAR-T/NK cells are estimated to produce up to 100 doses

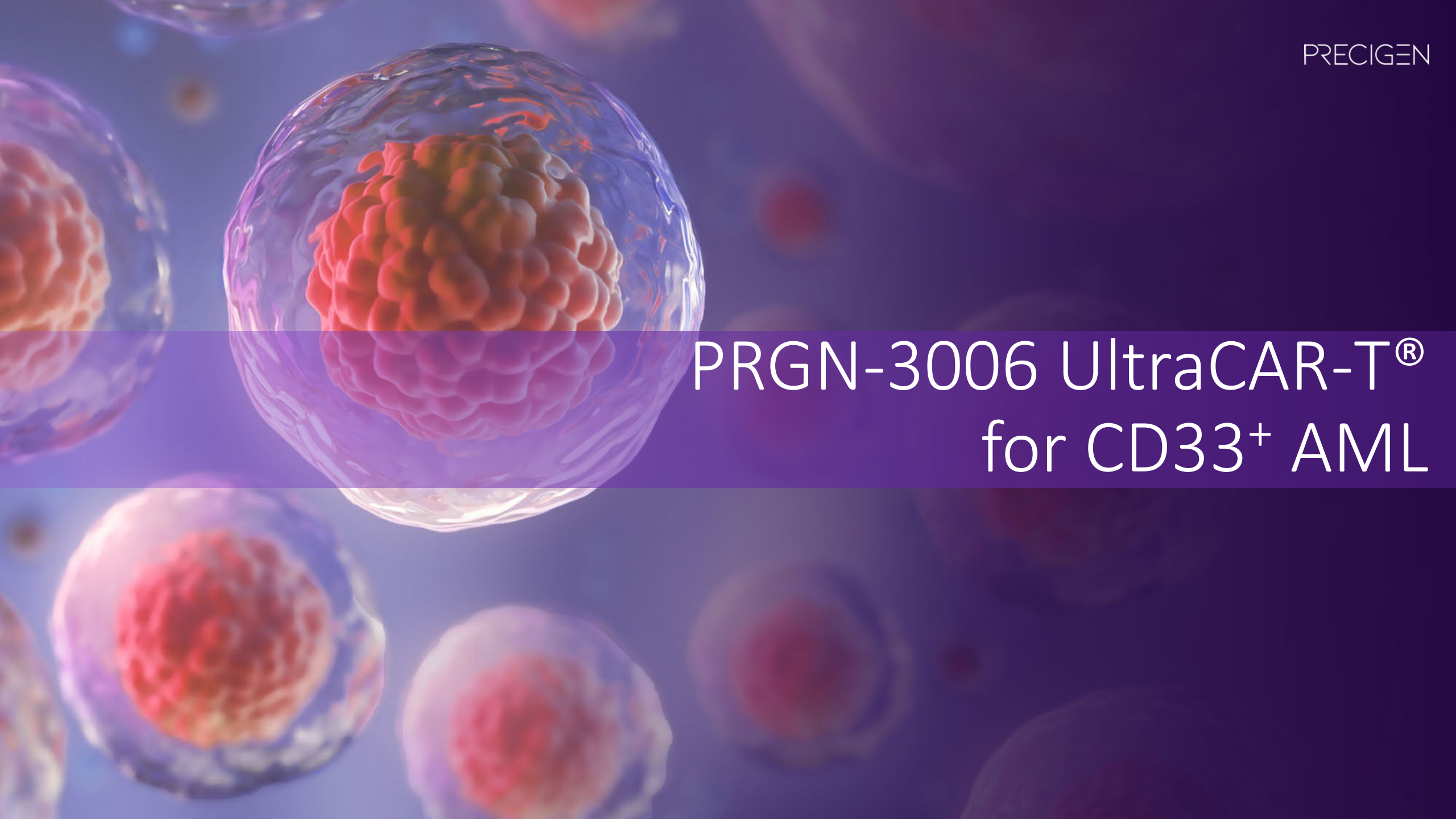


# UltraCAR-T: Overnight, Decentralized Manufacturing Process and Next Day Infusion Significantly Reduces Wait Time for Autologous CAR-T Treatment



## UltraCAR-T MANUFACTURING

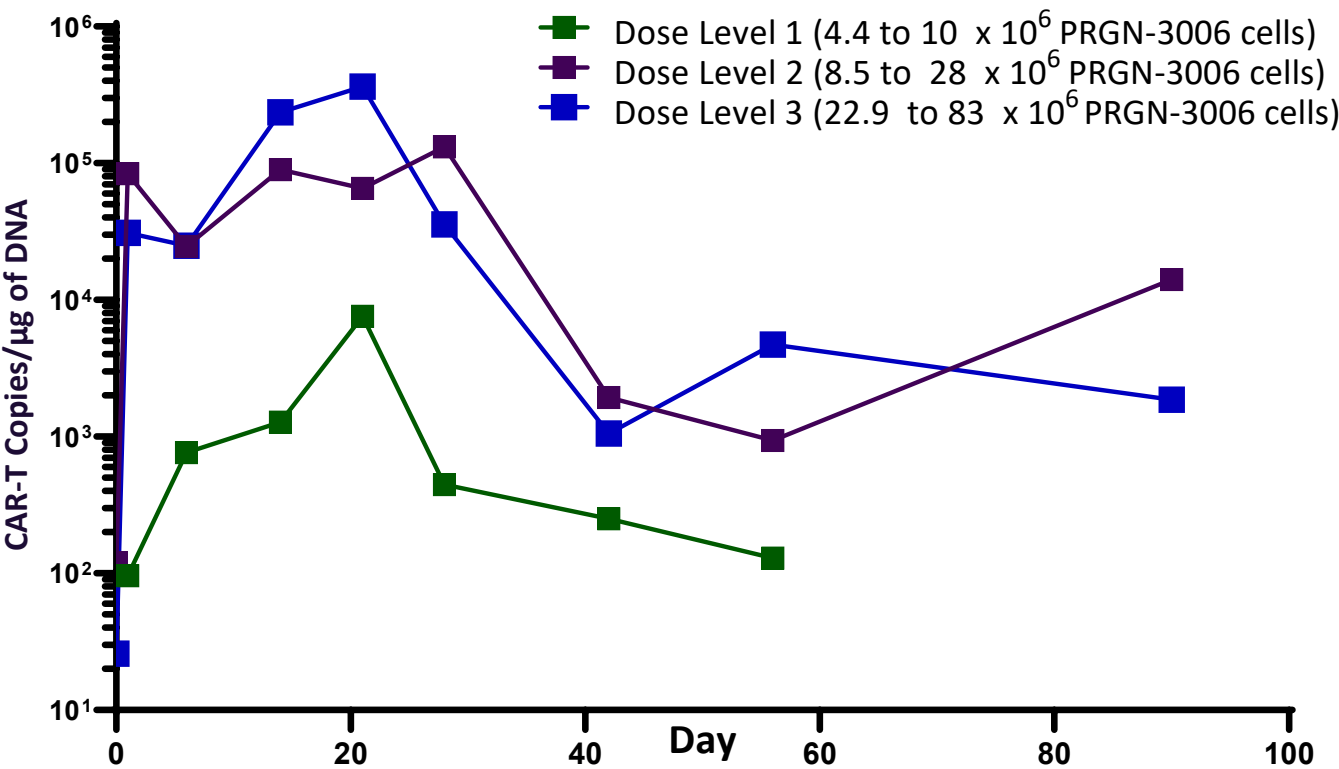
- Proprietary UltraPorator® Automated System
- Non-viral multi-gene delivery
- Overnight manufacturing
- Same day QC testing & release
- Uniform, multigenic cell product
- No *ex vivo* T cell activation or expansion

A microscopic view of several cells, likely T-cells, with prominent, glowing red nuclei. The cells are set against a dark blue background with a subtle grid pattern. A semi-transparent purple horizontal band is overlaid across the middle of the image, containing the product name.

# PRGN-3006 UltraCAR-T<sup>®</sup> for CD33<sup>+</sup> AML

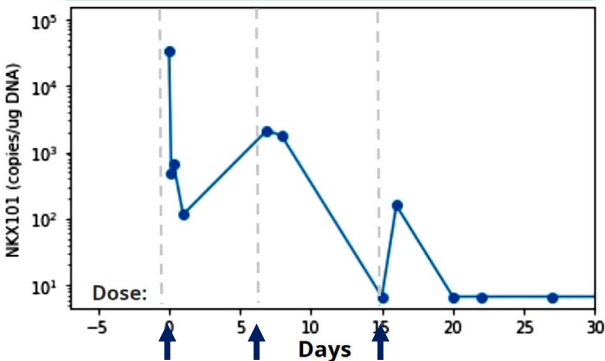
# PRGN-3006 Demonstrates Enhanced Expansion and Persistence in Blood and Bone Marrow After a Single Infusion Following Lymphodepletion

## PRGN-3006 EXPANSION & PERSISTENCE IN PERIPHERAL BLOOD



## ALLOGENEIC CELL TECHNOLOGIES SHOW SHORT *IN VIVO* PERSISTENCE

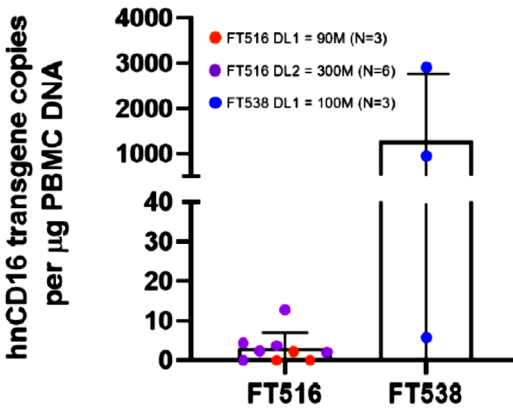
NKX101 detected after every dose  
3 doses of 1 billion CAR NK cells per dose  
Expected NK-like PK and clearance Day 20



Nkarta Therapeutics 25 April 2022

- 3 once weekly doses
- 1 billion CAR-NK cells per dose

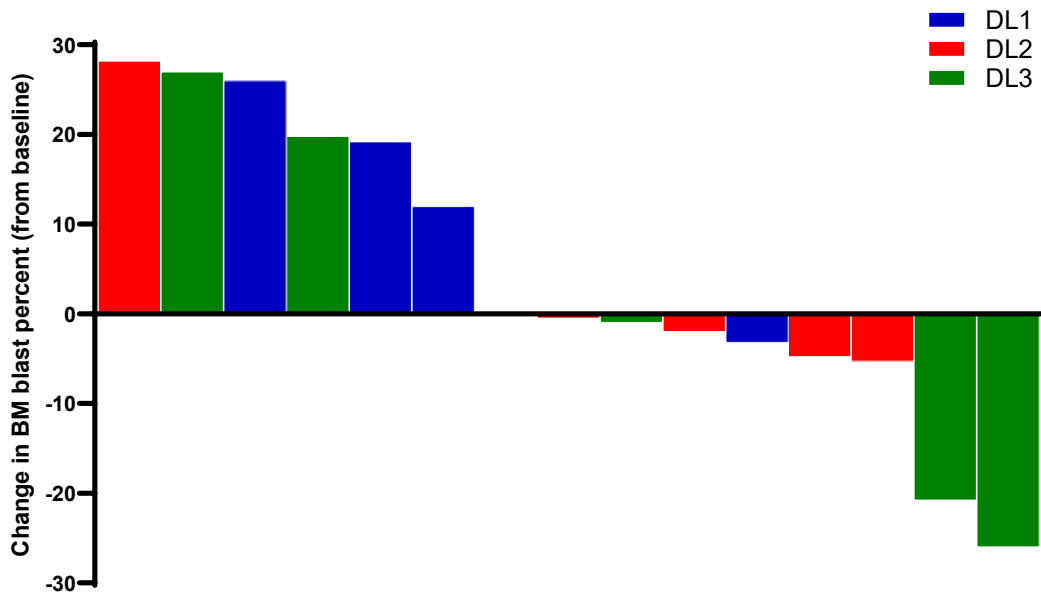
## Day 8 Peripheral Blood PK



- 3 once weekly doses per cycle
- Up to 300 million CAR-NK cells per dose

# A Single Infusion of PRGN-3006 Leads to Objective Responses in AML Patients

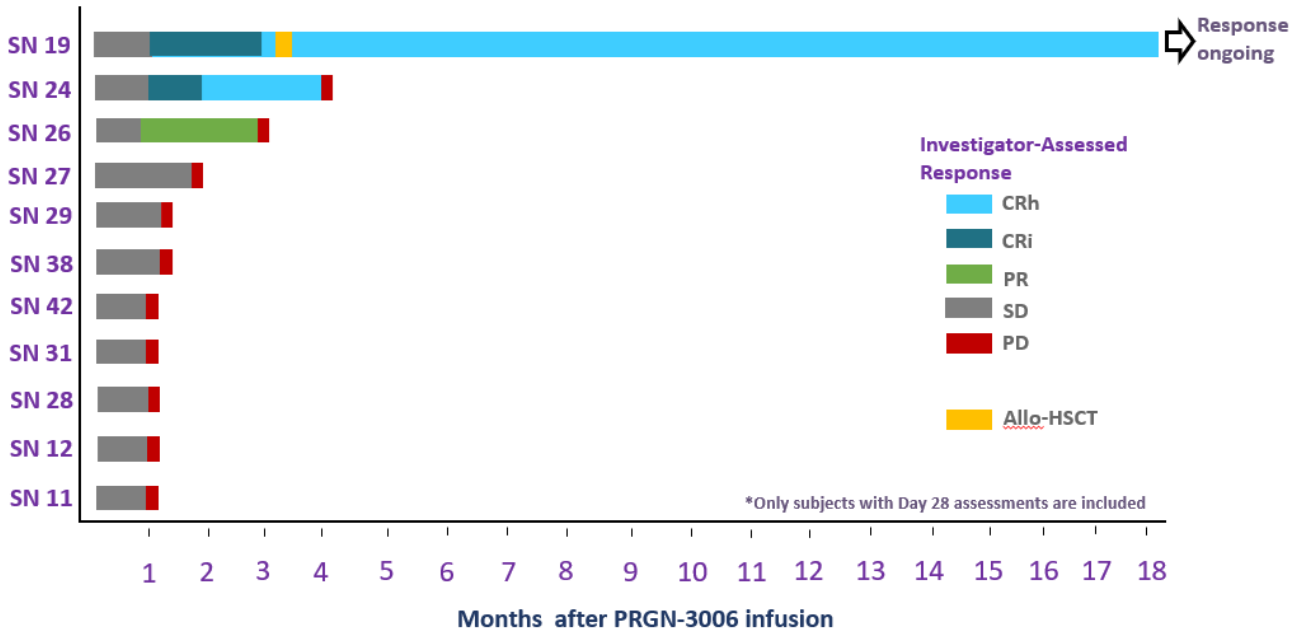
MEANINGFUL DECREASE BM BLASTS IN A HEAVILY PRETREATED PATIENT POPULATION (60%, 9/15)<sup>1</sup>



|      |   |   |   |   |   |   |    |    |    |    |    |   |    |    |    |
|------|---|---|---|---|---|---|----|----|----|----|----|---|----|----|----|
| AML  | + | + | + | + | + |   |    | +  |    | +  | +  | + | +  |    | +  |
| MDS  |   |   |   |   |   |   | +  |    | +  |    |    |   |    |    | +  |
| CMML |   |   |   |   |   | + |    |    |    |    |    |   |    |    |    |
| BOR  |   |   |   |   |   |   | SD | PR | SD | SD | CR |   | CR | SD | SD |

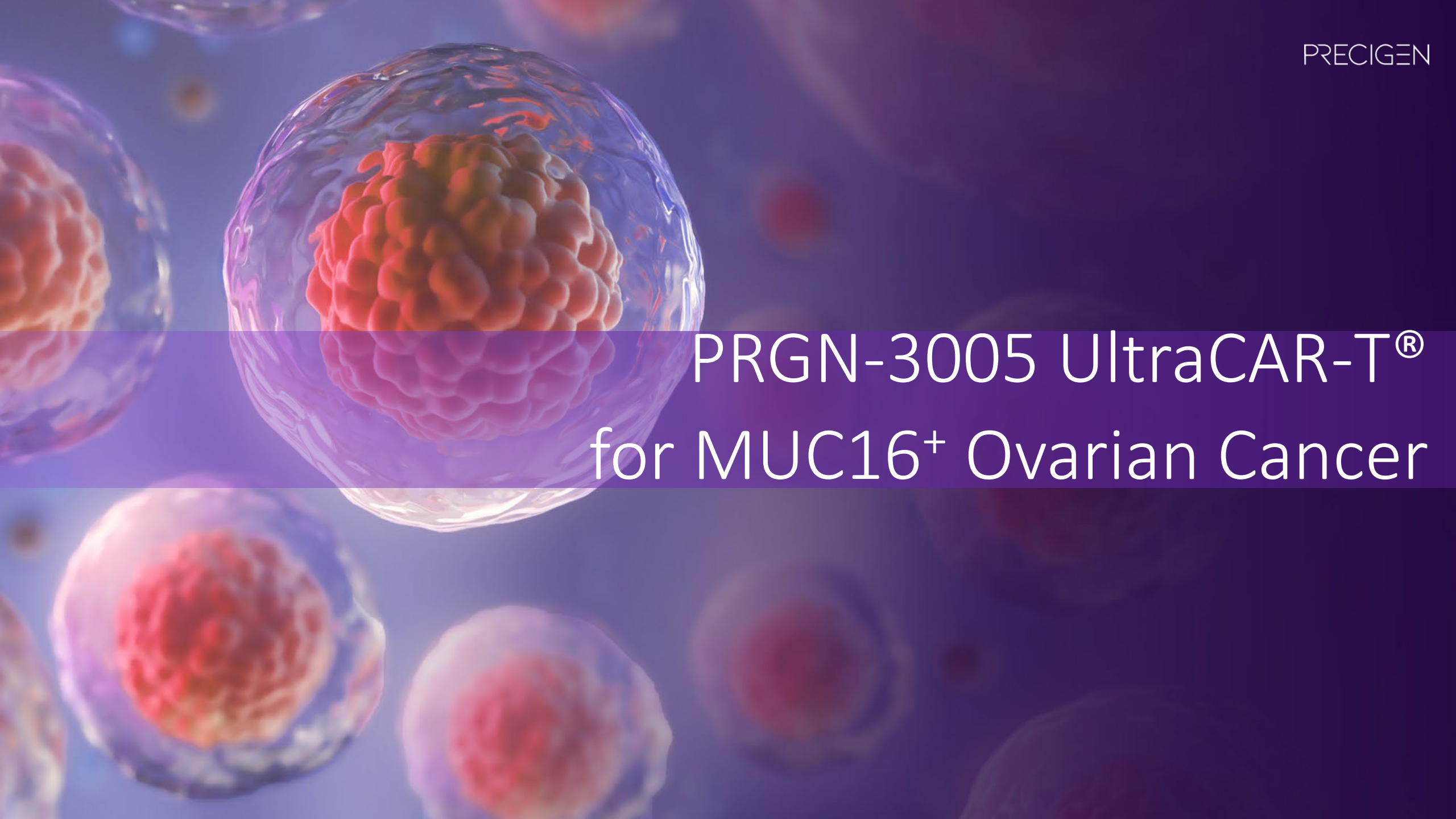
<sup>1</sup>Data is from subjects with evaluable data post infusion (15/16)

PRGN-3006 INFUSION RESULTED IN OBJECTIVE RESPONSE RATE OF 27% IN AML PATIENTS<sup>1</sup>



|                               | AML        | MDS        | CMML |
|-------------------------------|------------|------------|------|
| Disease Control Rate (at D28) | 45% (5/11) | 3/3 (100%) | 0/1  |
| Objective Response Rate (ORR) | 27% (3/11) | 0/3        | 0/1  |

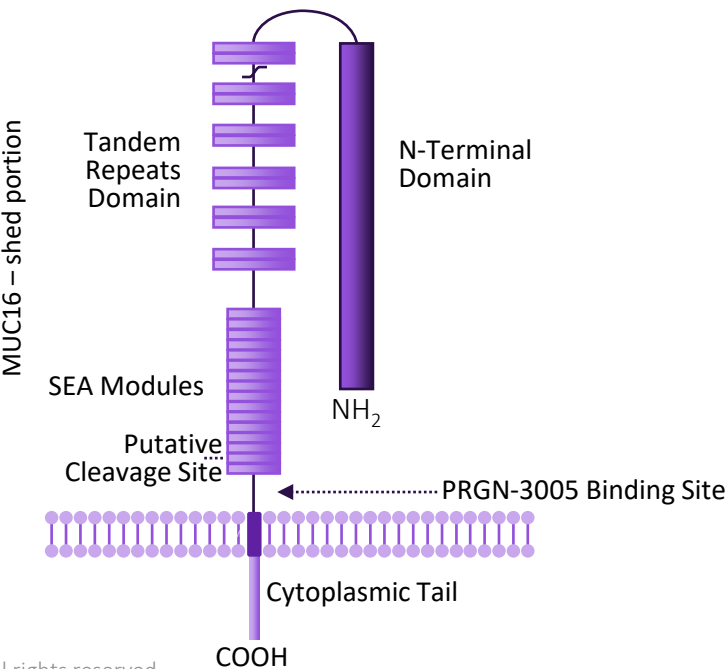


A microscopic view of several cells, likely cancer cells, with prominent, glowing red nuclei. The cells are surrounded by a blue, textured environment, possibly representing the extracellular matrix or a fluid medium. The overall image has a scientific and medical feel.

# PRGN-3005 UltraCAR-T<sup>®</sup> for MUC16<sup>+</sup> Ovarian Cancer

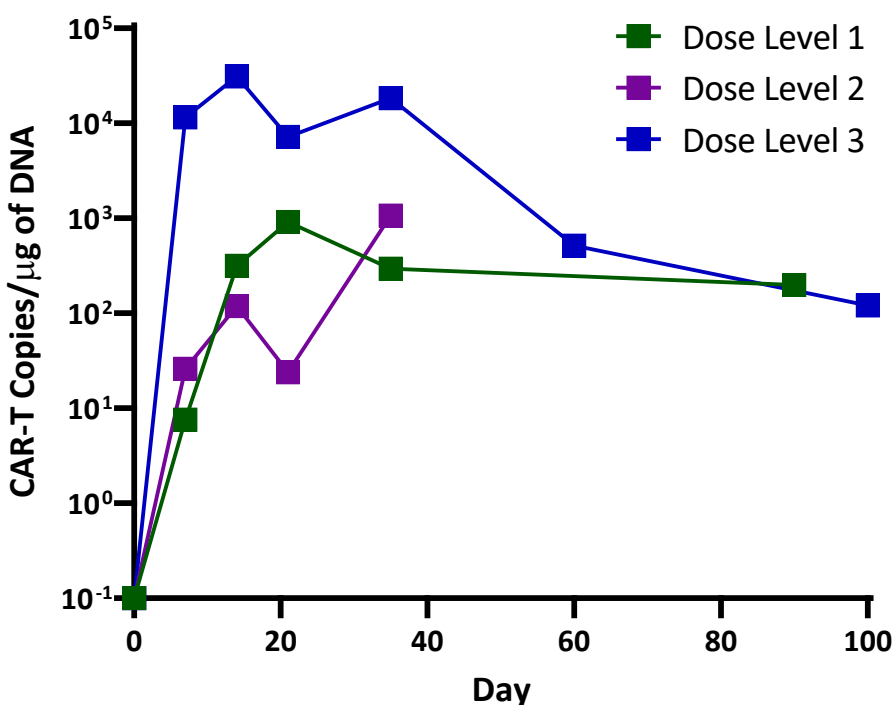
## PRGN-3005 TARGETS UNSHED PORTION OF MUC16

- Non-viral system to simultaneously express MUC16 CAR, mbIL15 and kill switch
- Overnight, decentralized manufacturing process
- MUC16 is overexpressed on >80% of ovarian tumors<sup>1</sup>
- Limited expression found on healthy tissues
- Initial target is advanced stage platinum resistant ovarian cancer



## PRGN-3005 EXPANSION & PERSISTENCE IN PERIPHERAL BLOOD

### INTRAPERITONEAL (IP) ARM



| Dose Level (DL) | Subjects | Dose Range (UltraCAR-T Cells/kg)          | Total UltraCAR-T Dose Administered |
|-----------------|----------|---|------------------------------------|
| DL1             | N=3      | >3x10 <sup>4</sup> to ≤1x10 <sup>5</sup>  | 6 – 7.6 x10 <sup>6</sup> cells     |
| DL2             | N=3      | >1x10 <sup>5</sup> to ≤ 3x10 <sup>5</sup> | 12 – 21 x10 <sup>6</sup> cells     |
| DL3             | N=4      | >3x10 <sup>5</sup> to ≤ 5x10 <sup>6</sup> | 33 – 321 x10 <sup>6</sup> cells    |



# PRGN-3005 Phase 1/1b Clinical Trial: Interim Data in the IP Arm Demonstrate Favorable Safety and Positive Clinical Activity in Ovarian Cancer Patients

## SAFETY SUMMARY

### CAR-T Cell Toxicity (N=10)

#### CRS (ASTCT guidelines)

- CRS, any grade: **0%** (0/10)
- Use of tocilizumab: **0%** (0/10)

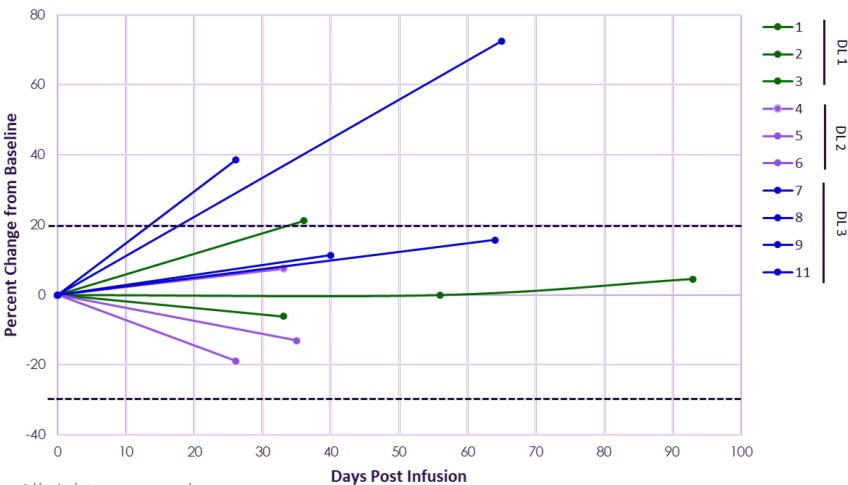
#### Neurotoxicity (CARTOX-10)

- Neurotoxicity, any grade: **0%** (0/10)

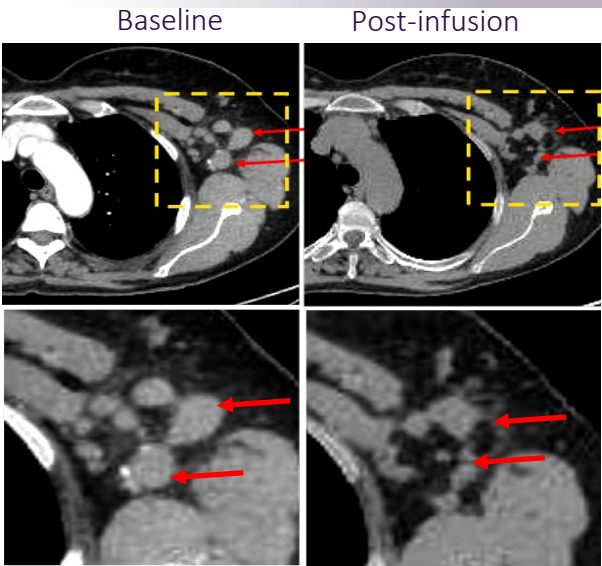
- Favorable safety profile across the Dose Levels tested in IP Arm
- No incidences of CRS
- No neurotoxicity

## INTRAPERITONEAL (IP) ARM

### CHANGE IN SUM OF DIAMETERS OF TARGET LESIONS

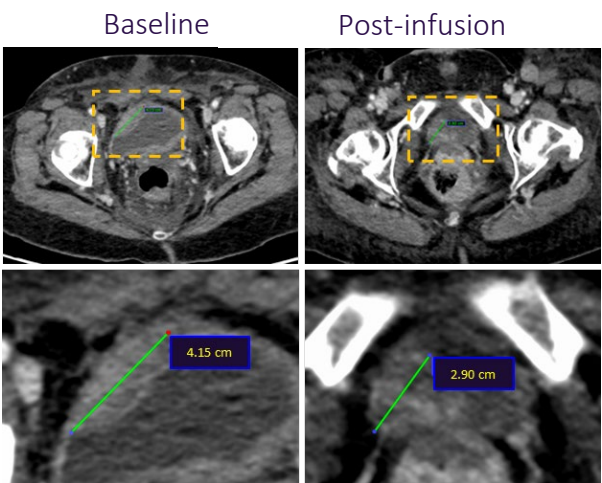


## CASE STUDY 1



- Patient administered low dose ( $7.5 \times 10^6$  Total UltraCAR-T cells) PRGN-3005 via IP administration without lymphodepletion
- Complete response in axillary lymph node target lesion after 3 months

## CASE STUDY 2

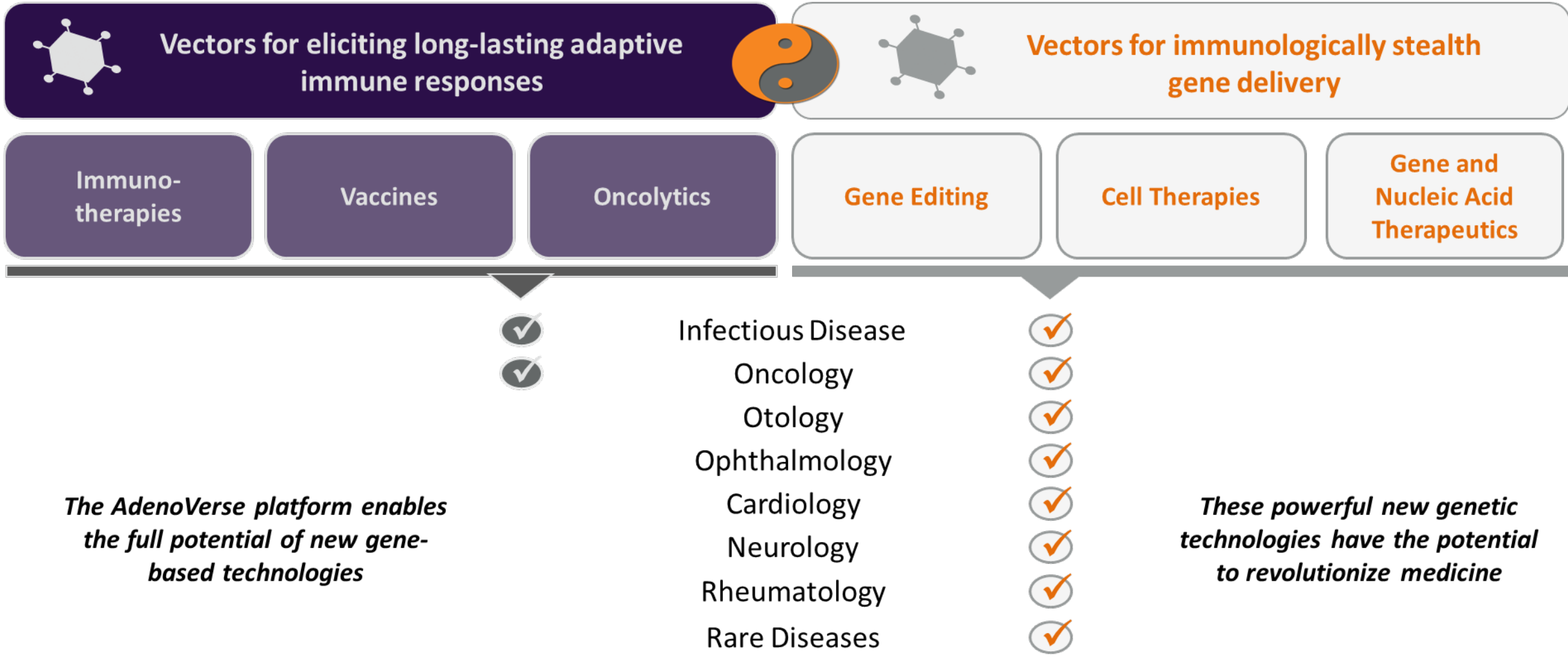


- Patient administered low dose ( $19 \times 10^6$  Total UltraCAR-T cells) PRGN-3005 via IP administration without lymphodepletion
- Example of observed decrease in size of target lesions, including solid lesions such as the bladder (above)

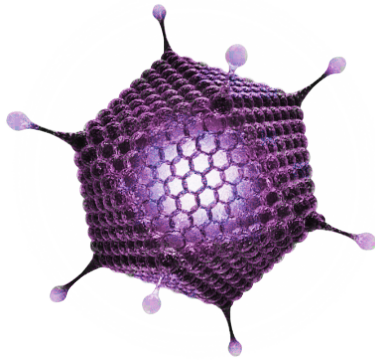
# AdenoVerse™ Immunotherapy Platform

Overview & Differentiation

## A library of adenoviral vectors with diverse and unique biological properties



## PRECIGEN'S GORILLA ADENOVECTORS SHOW SUPERIOR PERFORMANCE CHARACTERISTICS



- Large genetic payload capacity
- Off-the-shelf availability
- Ability for repeat administration
- Durable antigen-specific immune response
- Non-replicating adenoviruses
- Highly productive manufacturing process

## LIMITATIONS OF COMPETING APPROACHES

### VACCINES

- Limited antigen coverage
- DNA vaccines may have relatively poor immunogenicity
- Pre-existing immunity to human Ad5 may limit efficacy<sup>1</sup>

### TCR-T CELLS

- Applicable in only a small subset of patients due to HLA polymorphism
- Target only a single antigen epitope
- Long and expensive manufacturing process
- Potential for the mispairing of endogenous and exogenous TCR chains





# PRGN-2012 AdenoVerse™ Immunotherapy for Recurrent Respiratory Papillomatosis



# Precigen Virtual R&D Day

Tuesday, January 24, 2023

4:30 PM ET

## R&D DAY PARTICIPANTS



Clint T. Allen, MD

Senior Investigator, Surgical Oncology Program  
Center for Cancer Research National Cancer Institute (NCI)  
Lead associate investigator for the PRGN-2012 clinical trial



Helen Sabzevari, PhD

President and CEO  
Precigen

## RRP IS CAUSED BY HPV6 OR HPV11 INFECTION<sup>1-2</sup>

- A rare disease in which benign tumors called papillomas grow in the respiratory tract
- Symptoms include hoarse voice, difficulty sleeping and swallowing, chronic coughing, or breathing problems
- Affects both children and adults
- Tracheal involvement and airway obstruction occurs in ~25% of cases



Normal trachea

RRP Patient

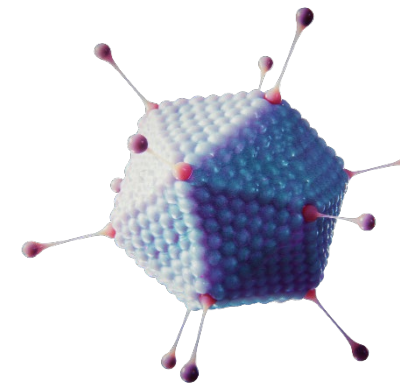
## CURRENT TREATMENT PARADIGM

- Repeat surgery is the only standard-of-care treatment for RRP
- Patients can require hundreds of lifetime surgeries

## RATIONALE FOR HPV6/11 THERAPEUTIC VACCINE FOR RRP

- Immune-mediated clearance of HPV is the only way to potentially cure RRP
- T cells are the only immune cell that can specifically detect and kill HPV infected cells
- Lack of HPV-specific T cells in RRP patients
- Prophylactic vaccines cannot generate HPV-specific T cell response

## PRGN-2012 TARGETS HPV6/11 INFECTED CELLS



PRGN-2012

- Gorilla adenoviral vector, with the ability for repeat injections
- Designed to elicit T-cell mediated immune responses against papilloma cells infected with HPV6 or HPV11

## RRP DISEASE PREVALENCE



Active Cases in US<sup>1</sup>:

**~10,000 Adult Cases**

**~6,000 Juvenile Cases**



Active Cases Ex-US<sup>2</sup>:

**~60,000 Adult Cases**

## ESTIMATED MARKET OPPORTUNITY



**>\$1B**

Peak annual market opportunity in US<sup>4</sup>



**~\$2B**

Peak annual market opportunity including ex-US<sup>5</sup>

## US ECONOMIC BURDEN ON RRP PATIENTS

**~\$100,000 + INDIRECT COSTS = \$MILLIONS**

ANNUAL DIRECT COSTS<sup>3</sup>

E.G., LOSS OF INCOME/WORK

IMPLIED LIFETIME COSTS

## POTENTIAL FUTURE OPPORTUNITY

Other HPV6 and HPV11 US disease burden<sup>6</sup>  
~ 350,000 cases of genital warts in sexually active adults

## CASE STUDY

- Patient required surgery once every 6 weeks for 2.5 years prior to enrollment
  - 8 surgeries in 12 months prior to PRGN-2012 treatment start
- Patient received 4 vaccinations of PRGN-2012 at  $5 \times 10^{11}$  vp/dose (Dose Level 2)
- Patient did not require surgery at 6 weeks follow up after treatment completion

Baseline



6 weeks post treatment completion

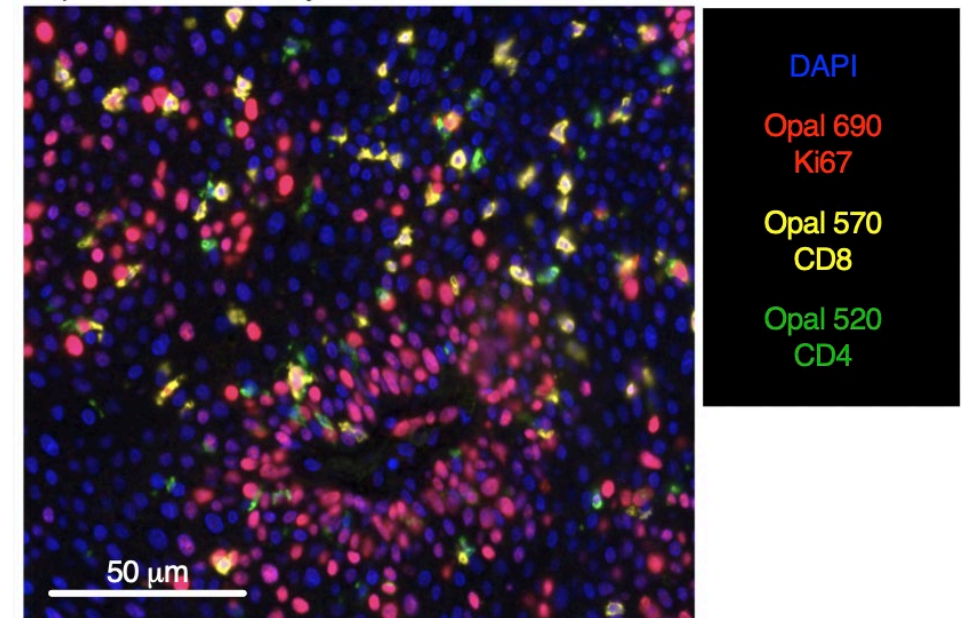


## CASE STUDY: PRGN-2012 TREATMENT RESULTS IN INCREASE IN T-CELL INFILTRATION OF PAPILOMA

- Low levels of T cells at baseline consistent with lack of HPV-specific T cells in RRP patients
- Significant (>10X) increase in T cells infiltrating papilloma post PRGN-2012 treatment

### Post-treatment

Papilloma CD8 density 20.8 cells/mm<sup>3</sup>



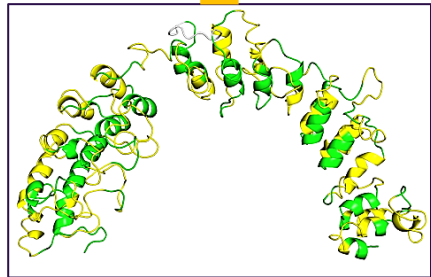
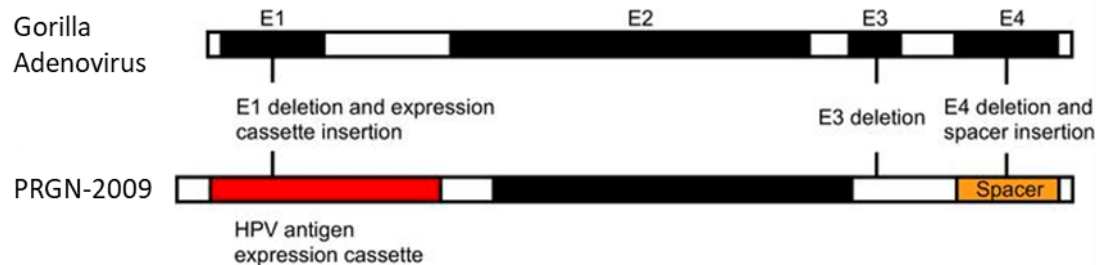
Photomicrographs of multispectral immunofluorescence identifying T cells in papilloma sections from a patient



# PRGN-2009 AdenoVerse™ Immunotherapy for HPV-associated cancers

## PRGN-2009: MULTI-EPITOPE ANTIGEN DESIGN TO TARGET HPV16/18

- Gorilla adenoviral vector with ability for repeat injections
- Multi-epitope antigen design to induce a robust immune response against HPV16/18



Multi-epitope antigen design

## DISEASE SNAPSHOT

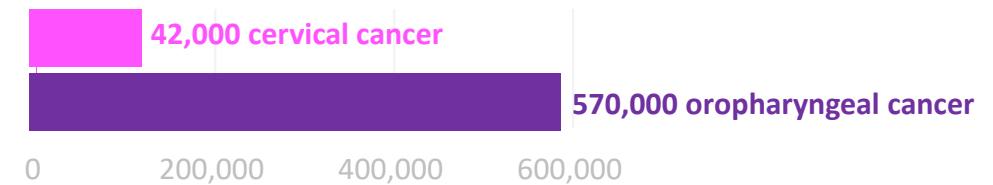


HPV infections account for 5% of all cancers<sup>1</sup>



**690,000**  
New cancer cases in key markets attributable to HPV infections per year<sup>2</sup>

## Global Addressable New Cases Per Year



- Significant unmet need with ~15% ORR with Keytruda<sup>®6</sup>

## ESTIMATED MARKET OPPORTUNITY

**> \$1B**

Peak Annual Market Opportunity<sup>3</sup>  
Cervical Cancer + Head & Neck Cancer

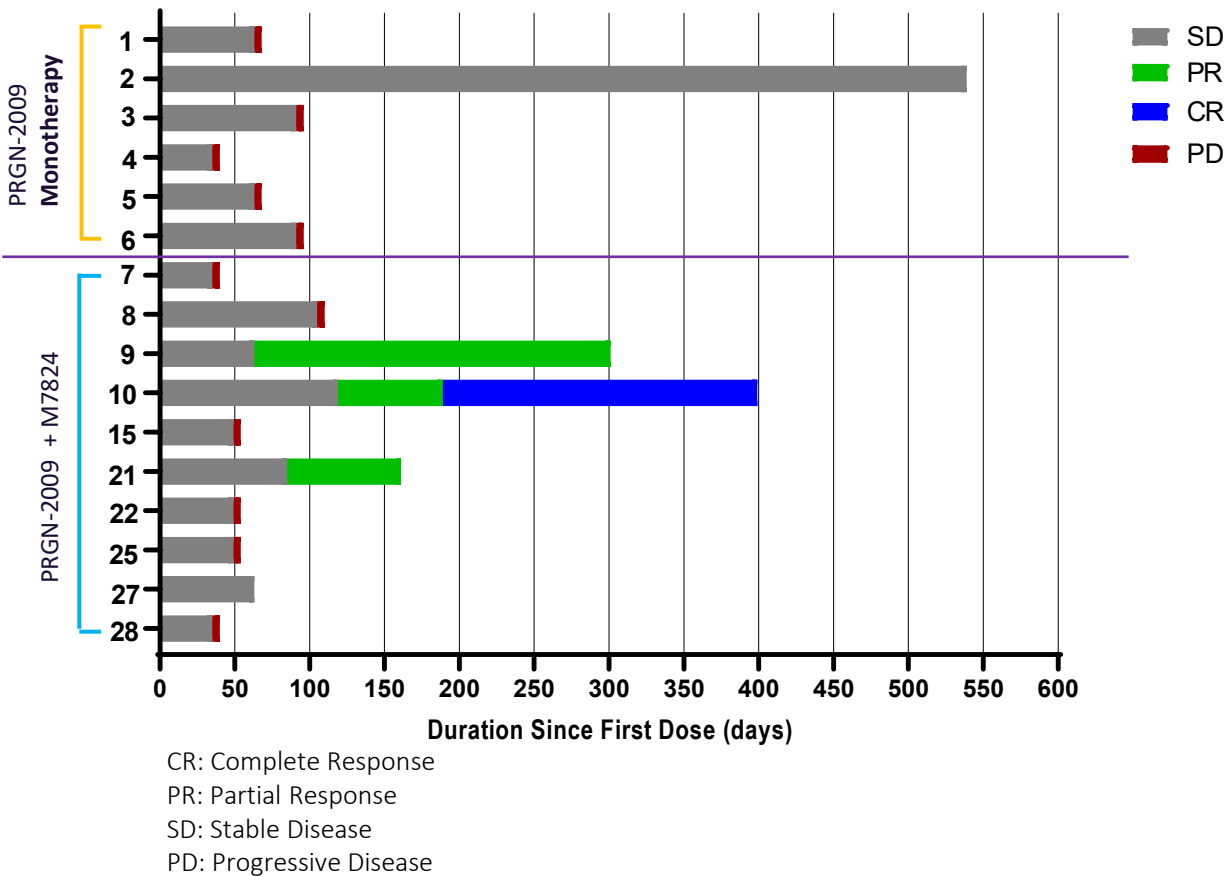
**> \$10B**

Global Market for Cervical Cancer + Head & Neck Cancer<sup>4,5</sup>  
therapies to grow from \$6.7B in 2021 to >\$10B in 2030





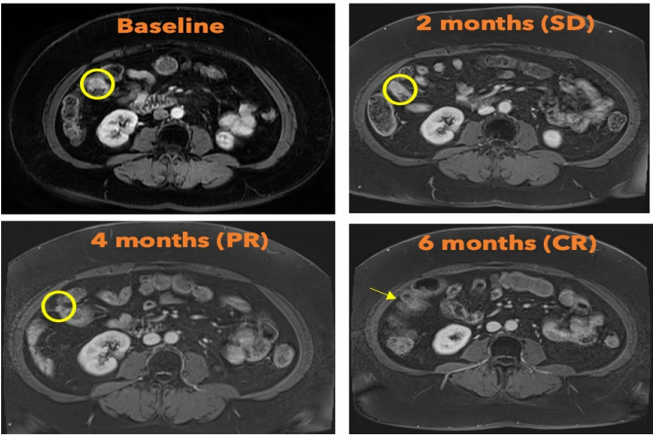
SUMMARY OF RESPONSES



BEST OVERALL RESPONSE

| PRGN-2009 + M7824                             |            |                |                     |
|---|------------|----------------|---------------------|
|   | All (n=10) | Cervical (n=2) | Head and Neck (n=7) |
| Disease Control Rate (DCR) at first restaging | 40% (4/10) | 2/2 (100%)     | 2/7 (28%)           |
| Objective Response Rate (ORR)                 | 30% (3/10) | 2/2 (100%)     | 1/7 (14%)           |

CASE STUDY

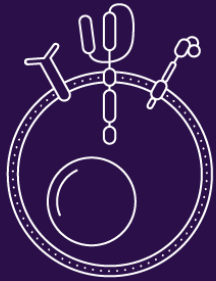


- Cervical cancer patient
- PRGN-2009 at  $5 \times 10^{11}$  vp/dose in combination with M7824
- CR from approx. 6 months



# Summary

## UltraCAR-T<sup>®</sup>

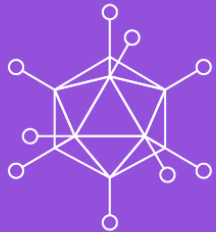


- Continue enrollment and add additional clinical sites to the Phase 1b expansion trial of PRGN-3006 in AML
- Phase 1b expansion clinical trial data presentation expected in 2024

- Continue enrollment and add additional clinical sites to the Phase 1b expansion trial of PRGN-3005 in Ovarian Cancer
- Phase 1b expansion trial clinical data presentation expected in 2024

- Initiate dosing in Phase 1 dose escalation study of PRGN-3007 in ROR1<sup>+</sup> hematological and solid cancers
- Phase 1 clinical data presentation expected in 2024

## AdenoVerse<sup>™</sup>



- Complete Phase 1 safety and efficacy data presentation of PRGN-2012 in RRP scheduled for January 24, 2023
- Outline regulatory strategy in RRP based on ongoing FDA discussions

- Phase 1 monotherapy and combination therapy safety and efficacy data presentation of PRGN-2009 expected in 1H '23
- Interim Phase 2 monotherapy data of PRGN-2009 in newly diagnosed OPSCC expected in 2H '23

## **SLIDE: Current CAR-T Therapies Have Not Solved One of Cell Therapy's Biggest Bottlenecks – Long Vein-to-Vein Times Leading to Delayed Patient Treatment**

1-Plieth, J., Ash 2022 – fast production fails to cure Car-T's problem. *Evaluate Vantage* (2022). <https://www.evaluate.com/vantage/articles/events/conferences-trial-results/ash-2022-fast-production-fails-cure-car-ts>

## **SLIDE: A Single Infusion of PRGN-3006 Leads to Objective Responses in AML Patients**

1-Sallman, D., *et al.*, 64th Annual Meeting and Exposition of the American Society of Hematology (ASH). Abstract 4633. Phase 1/1b Safety Study of Prgn-3006 Ultracar-T in Patients with Relapsed or Refractory CD33-Positive Acute Myeloid Leukemia and Higher Risk Myelodysplastic Syndromes (2022). <https://ash.confex.com/ash/2022/webprogram/Paper169142.html>

## **SLIDE: PRGN-3005 UltraCAR-T: First-in-class Investigational Therapy in Ovarian Cancer**

1-Modified from Piché, A. *et al.*, *World J Obstet Gynecol.* (2016)

## **SLIDE: AdenoVerse: Industry-leading Adenovector Platform**

1-Geisbert. T.W., *J Virol.* (2011)

## **SLIDE: Recurrent Respiratory Papillomatosis (RRP): Need for Safe and Effective Treatment**

1-What is RRP? Recurrent Respiratory Papillomatosis Foundation, Accessed 2023. <https://rrpf.org/what-is-rrp/>

2-Venkatesan, N.N., *et al.*, Recurrent Respiratory Papillomatosis. *Otolaryngologic Clinics of North America*, Volume 45, Issue 3, June 2012, Pages 671-694. <https://doi.org/10.1016/j.otc.2012.03.006>

## **SLIDE: Recurrent Respiratory Papillomatosis (RRP): Need for Safe and Effective Treatment**

1-Derkay, C. S., Task force on recurrent respiratory papillomas: a preliminary report. *Archives of Otolaryngology–Head & Neck Surgery* (1995).121(12), 1386-1391;

About RRP – RRPF NIH Publication No. 10-4307 (2017)

2-Donne, A. J., *et al.*, Prevalence and management of recurrent respiratory papillomatosis (RRP) in the UK: cross-sectional study. (2016). DOI: [10.1111/coa.12683](https://doi.org/10.1111/coa.12683)

3-Derkay, C. S., *et al.*, Update on Recurrent Respiratory Papillomatosis. (2019). DOI: [10.1016/j.otc.2019.03.011](https://doi.org/10.1016/j.otc.2019.03.011)

4-Commissioned internal Precigen research; RRPf; OrphaNet; NORD; CDC; ScienceDirect; Wangu, Z., *et al.*, (2016); Evaluate Pharma; GlobalData; FDA; CapitalIQ; OECD; WorldBank; FiercePharma; Gordon *et al.* (2018)

5-Commissioned internal Precigen research on ex-US case numbers and discounted US penetration and pricing numbers

6-Genital HPV Infection – Basic Fact Sheet (2022). Division of STD Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention <https://www.cdc.gov/std/hpv/stdfact-hpv.htm#:~:text=Genital%20warts%3A%20Prior%20to%20HPV,U.S.%20will%20have%20cervical%20cancer>

## **SLIDE: PRGN-2009: First-in-class Investigational Therapy for HPV-associated Cancers**

1-Miles *et al.*, *Gynecologic Oncology Research and Practice* (2017) 4:10

2-de Martel C, *et al.*, Volume 8, ISSUE 2, e180-e190, February 01, 2020. Key markets include US, EU5 and Japan

3-Commissioned Internal Precigen Research

4-Arizton Advisory and Intelligence, Cervical Cancer Therapeutics Market Report Scope (2022)

5-Grandview Research, Head And Neck Cancer Therapeutics Market Size, Share & Trends Analysis Report By Therapy Type (Chemotherapy, Immunotherapy, Targeted Therapy), By Route Of Administration, By Distribution Channel, By Region, And Segment Forecasts, 2022 – 2030

6-FDA approves pembrolizumab for advanced cervical cancer with disease progression during or after chemotherapy (2018). <https://www.fda.gov/drugs/resources-information-approved-drugs/fda-approves-pembrolizumab-advanced-cervical-cancer-disease-progression-during-or-after-chemotherapy>



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