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Pioneering CAR T in Autoimmune Diseases

January 2025

Cindy
Patient warrior

Disclaimer and Forward-Looking Statements

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This presentation also contains estimates made by independent parties relating to industry market size and other data. These estimates involve a number of assumptions and limitations and you are cautioned not to give undue weight on such estimates. We have not independently verified the accuracy or completeness of such information and we do not take any responsibility with the accuracy or completeness of such information.

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This presentation includes results from named patient activities. Named patient activities are not part of our clinical trials for KYV-101 and data from investigator-initiated trials and named patient activities are reported by the relevant investigators and physicians. Such data are not obtained using a single protocol or designed to be aggregated or reported as study results and may be highly variable. While we do not expect to be able to use the results from these activities as the basis for approval in our applications for marketing approval to the U.S. Food and Drug Administration (FDA) or other foreign regulatory agencies, we believe that this strategy may provide additional clinical insights beyond highly focused clinical trials in specific geographies.

Throughout this presentation, the Company refers to its Phase 2 trial in stiff person syndrome as a pivotal trial; however, the FDA or other regulatory agencies may conclude that the trial is not sufficient to be registration-enabling, and the Company may be required to conduct additional trials or studies to support a Biologics License Application.

LIBERATING AUTOIMMUNE PATIENTS

through the

CURATIVE POTENTIAL OF CELL THERAPY

Robert, Patient warrior

Cindy, Patient warrior

Roger, Patient warrior

Bryce, Patient warrior

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2025: Kyverna's Transformative Year with Multiple Near-Term Catalysts

Pivoting to Late-Stage Development and Commercialization

Deliver FIRST Autoimmune CAR T in Neuro

40% enrolled in pivotal Phase 2 SPS trial; BLA targeted in 2026

FAST FOLLOW Accelerating MG and LN

Phase 1 LN data and interim Phase 2 MG data expected in 2H 2025

FURTHER Expand into Broader Autoimmune Indications

KYV-102 IND filing targeted in 2H 2025

Cash runway into 2027 to deliver key inflection points

SPS, Stiff Person Syndrome; MG, Myasthenia Gravis; LN, Lupus Nephritis
BLA, Biologics License Application; IND, Investigational New Drug Application

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Kyverna's Established Leadership in Autoimmune CAR T

Most Autoimmune CAR T Patients Treated
50+

Manufacturing Excellence and Innovation

Unique CAR T Construct

9 Regulatory Designations with RMAT, ODD and Fast Track

Building World-Class Leadership Team

RMAT, Regenerative Medicine Advanced Therapy; ODD, Orphan Drug Designation

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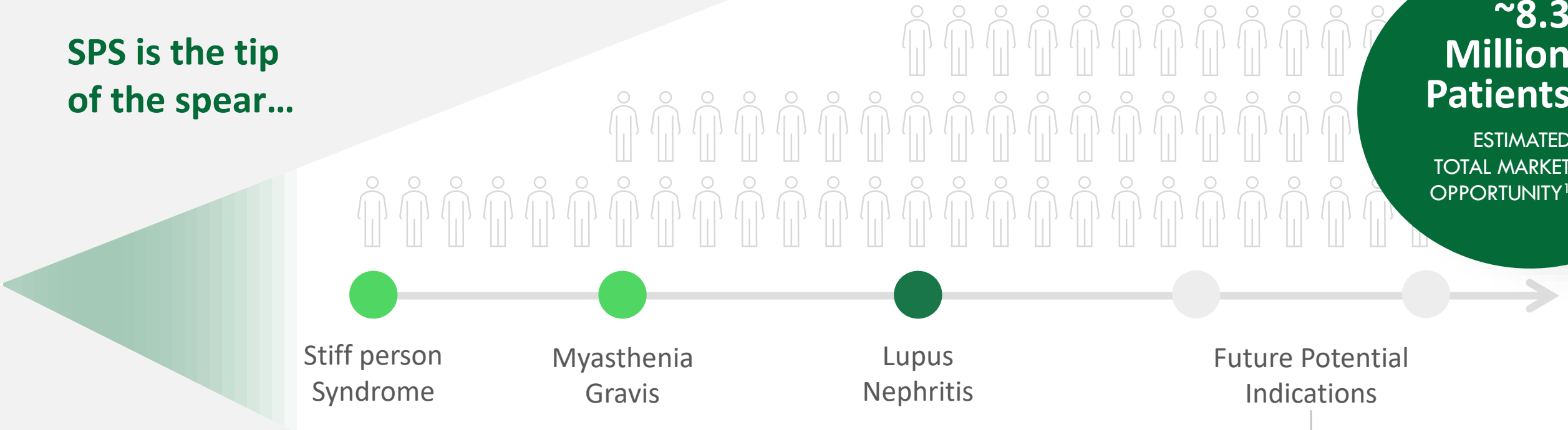
Prioritized Portfolio Unlocks Significant Opportunities across Neuroinflammatory and Rheumatologic Diseases

SPS is the tip of the spear…



Leveraging IITs and KYSA studies

Multiple sclerosis	Systemic sclerosis
NMOSD	Rheumatoid arthritis
CIDP	ANCA-associated vasculitis

And others…

1) Published literature through GlobalData market analysis reports and internal data 2022

NMOSD, neuromyelitis optica spectrum disorder; CIDP, chronic inflammatory demyelinating polyradiculoneuropathy; ANCA, antineutrophil cytoplasmic antibody

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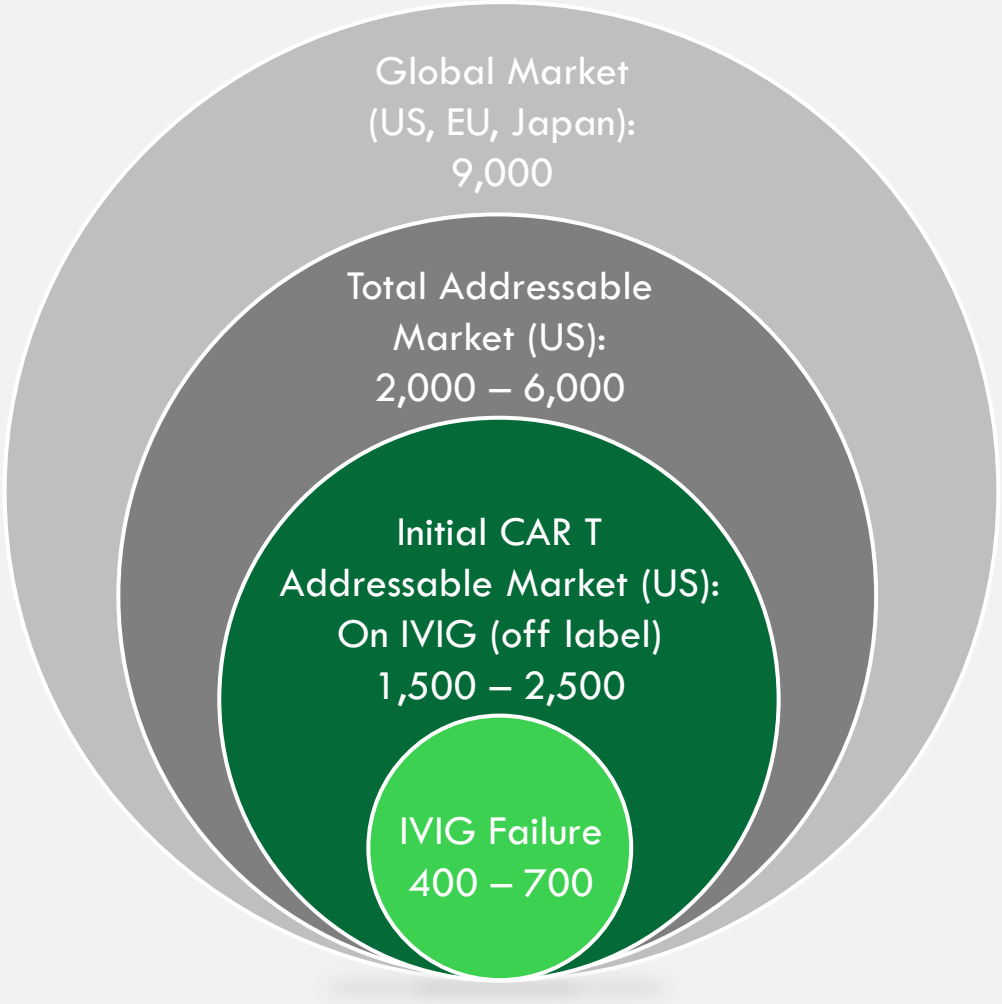
Stiff Person Syndrome:
Deliver Pivotal Phase 2 Study, Prepare for BLA Filing

- **RMAT designation and potential for 1st CAR T approved in autoimmune**
- **Pivotal Phase 2 is 40% enrolled with registrational intent**
- **No currently approved therapies**
- **High chronic cost burden**



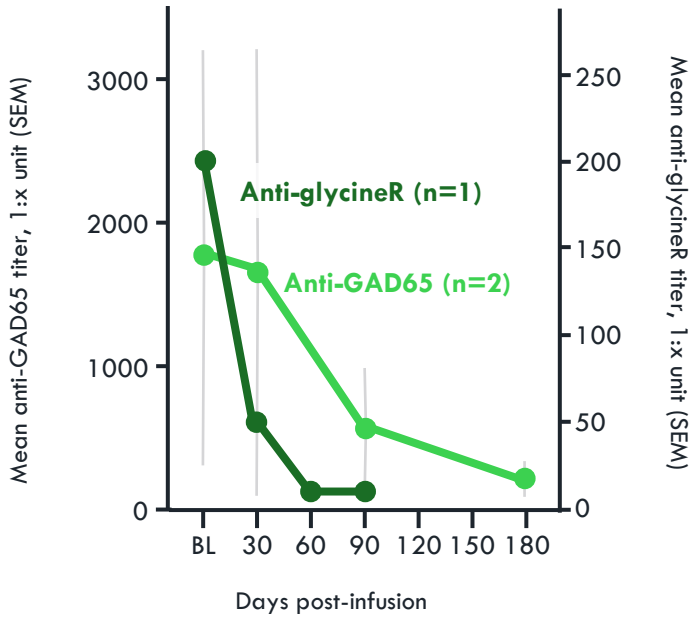
Source for market size: Analysis of Komodo Health claims data; Yi J, et al. Neurol. Neuroimmunol. Neuroinflamm. (2022); Dalakas MC. Neurol. Neuroimmunol. Neuroinflamm. (2023)
IVIG, Intravenous immunoglobulin therapy

KYV-101 in SPS: Demonstrates Strong Clinical Activity and Potential for Deep Responses

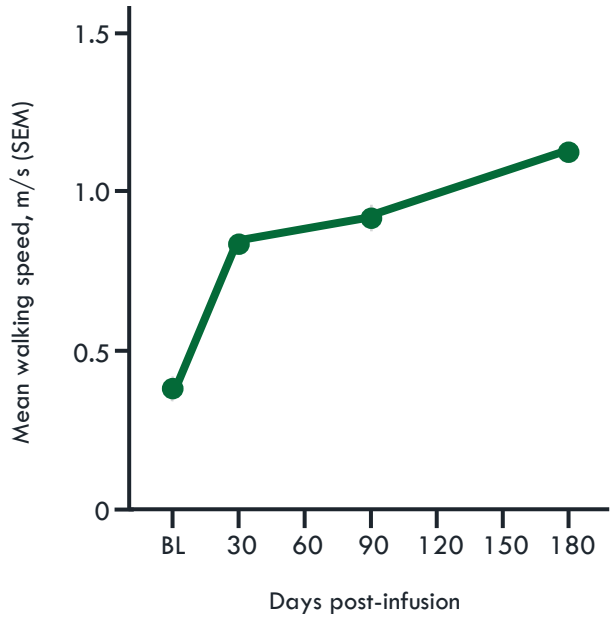
Previously presented at ECTRIMS

Kyverna Experience at Therapeutic Dose in Initial 3 Patients

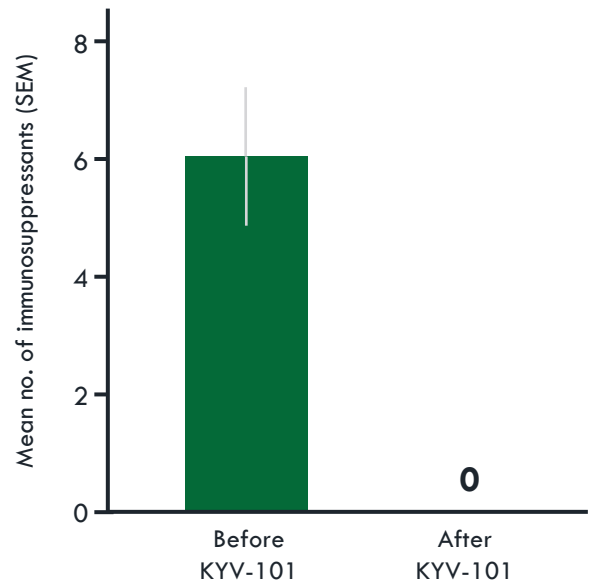
Reduction of Autoantibody Titers



Improvement in Mobility*



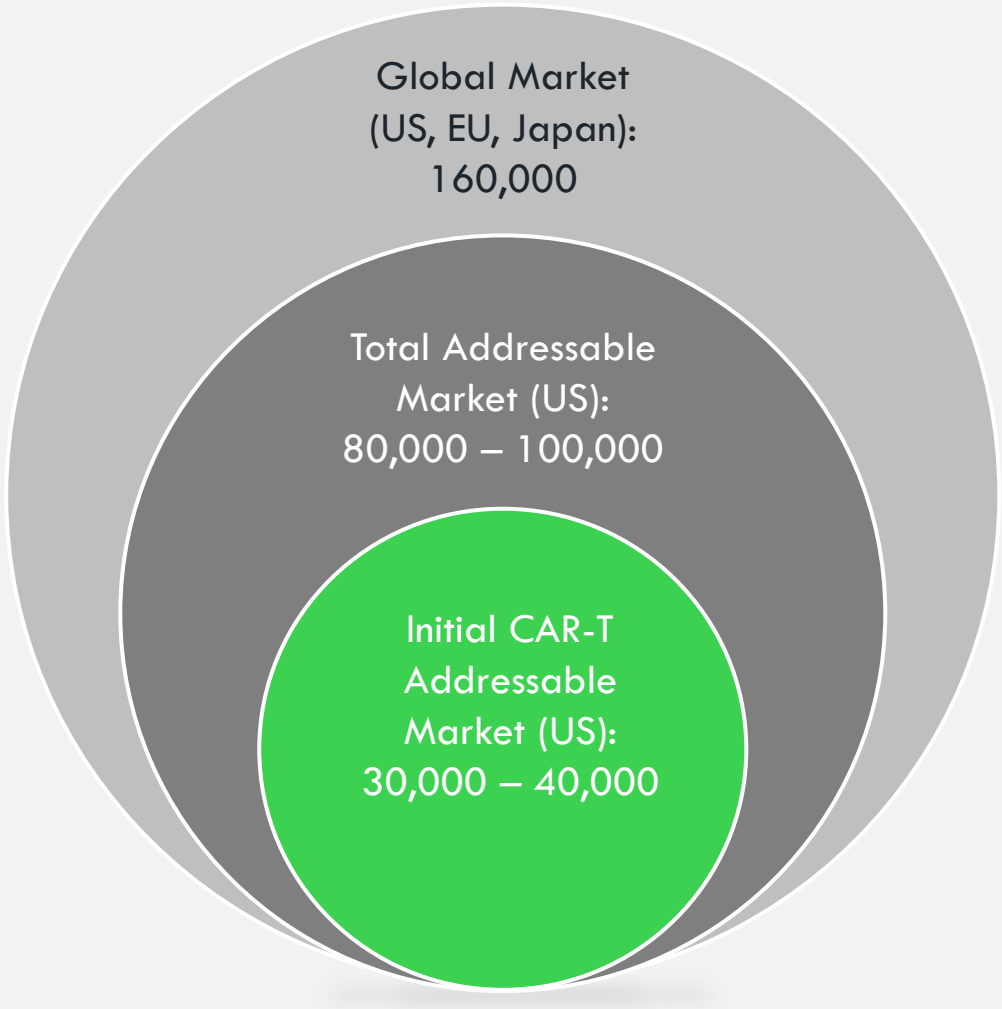
Elimination of Immunosuppressants†



*Data on walking speed available for 2 of 3 patients. †Data shown for immunosuppressant and immunomodulatory agents only; does not include physiologic replacement steroids ≤7.5 mg/day.
Note: named patient data
KYV-101 therapeutic dose is 1×10^8 CAR T cells/µL. Data cutoff October 31, 2024.
Reference: Updated from Kyverna Symposium at ECTRIMS, September 18, 2024. Copenhagen, Denmark.

Myasthenia Gravis:
Fast Follow Indication, Significant Unmet Need

- **RMAT designation with fast follow intent**
- **Phase 2 actively enrolling and dosing patients**
- **Synergistic commercial infrastructure to SPS**
- **Available therapies remain suboptimal with significant cost burden**



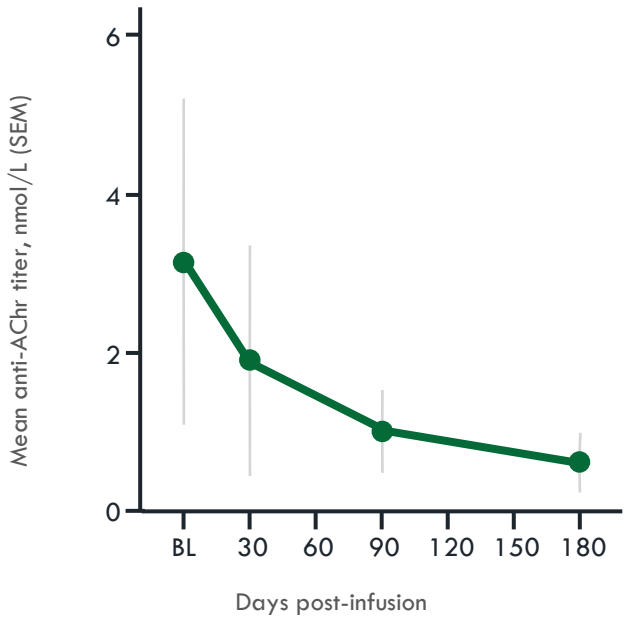
Source for market size: Analysis of Komodo Health claims data; GlobalData MG Forecast 2022; Bubuioc A, et al. J. Med. Life. (2021); ICER MG Report 2021; Oosterhuis HJ. J. Neurol. Neurosurgeon. Psichiatry. (1989); ADAPT trial data

KYV-101 in MG:
Has Demonstrated Rapid and Sustained Disease Control

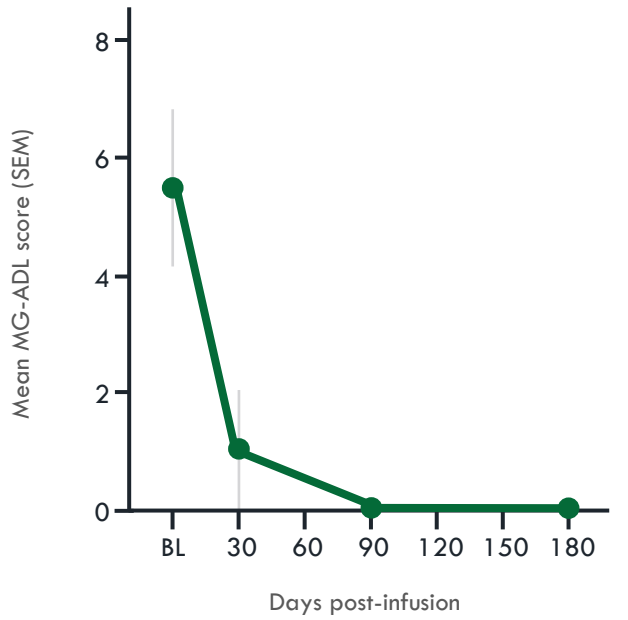
Previously presented at ECTRIMS

Kyverna Experience at Therapeutic Dose in Initial 3 Patients

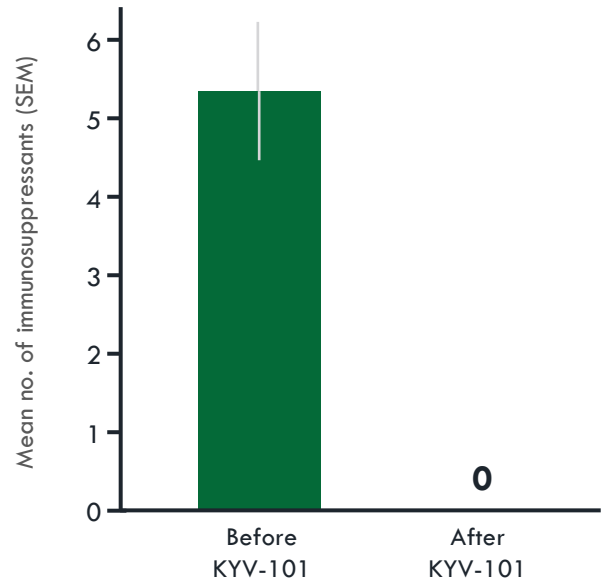
Reduction of Autoantibody Titers



Improvement in Muscle Function



Elimination of Immunosuppressants*



*Data shown for immunosuppressant and immunomodulatory agents only; does not include physiologic replacement steroids ≤7.5 mg/day.
Note: named patient data.
KYV-101 therapeutic dose is 1×10^8 CAR T cells/µL. Data cutoff October 31, 2024.
Reference: Updated from Kyverna Symposium at ECTRIMS, September 18, 2024. Copenhagen, Denmark.

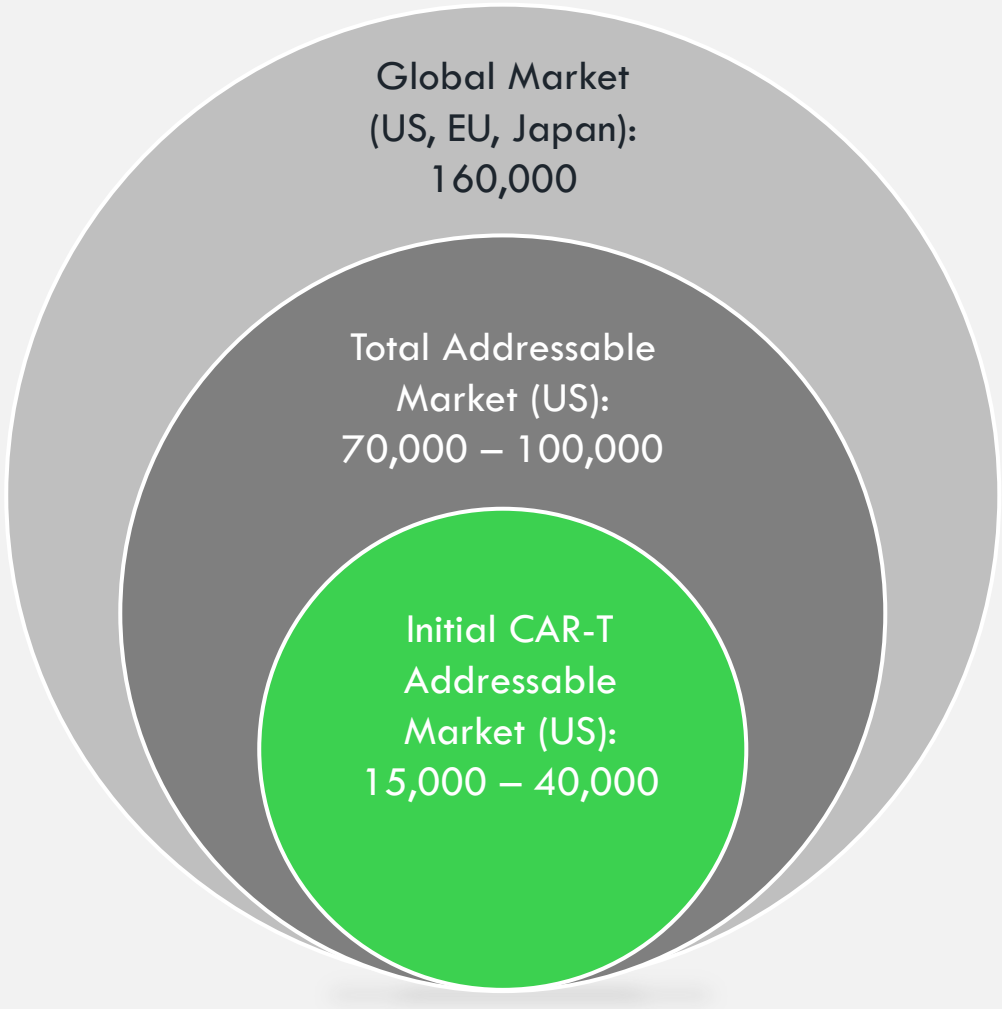
Lupus Nephritis:
High Burden of Disease Progression

Focused approach to address highest value patients in LN

Provides path to Rheumatology

Completion of Phase 1 enrollment expected 1H 2025

High chronic cost of care with up to 30% of LN patients developing end stage renal disease



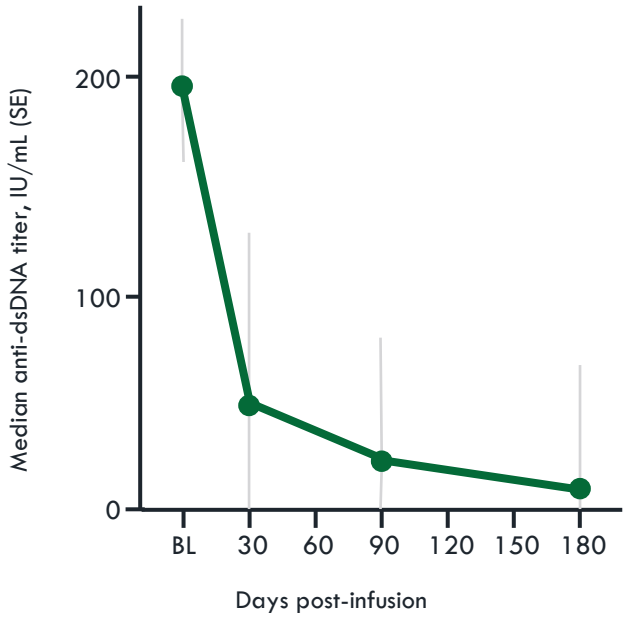
Source for market size: GlobalData SLE Forecast 2021; Hocaoglu M, et al. Arthritis Rheumatol. (2023) (LUMEN Study); Helmick CG, et al. Arthritis & Rheumatism. (2008); Gasparotto M, et al. Rheumatology. (2020)
Source for ESRD progression: Lateef A, Petri M. Arthritis Res Ther. 2012;14(Suppl 4):S4

KYV-101 in LN: Redefining Clinical Success and Delivering First CAR T Rheumatology Indication

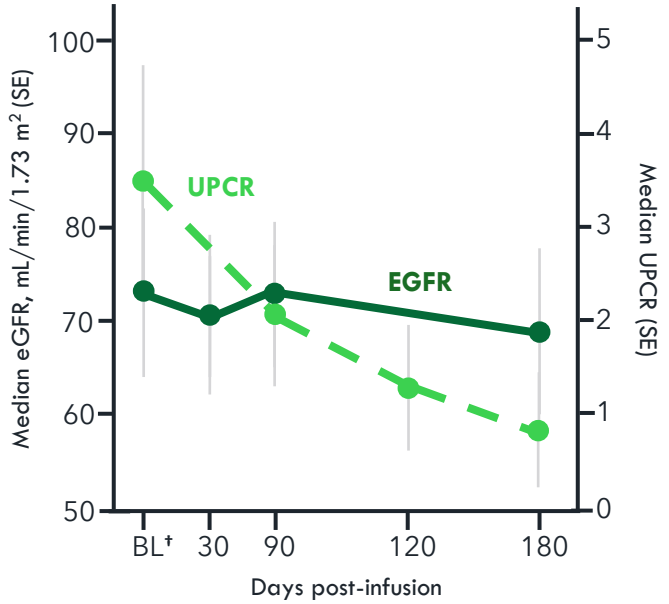
Previously presented at ACR Convergence

Kyverna Experience at Therapeutic Dose in Initial 4 Patients

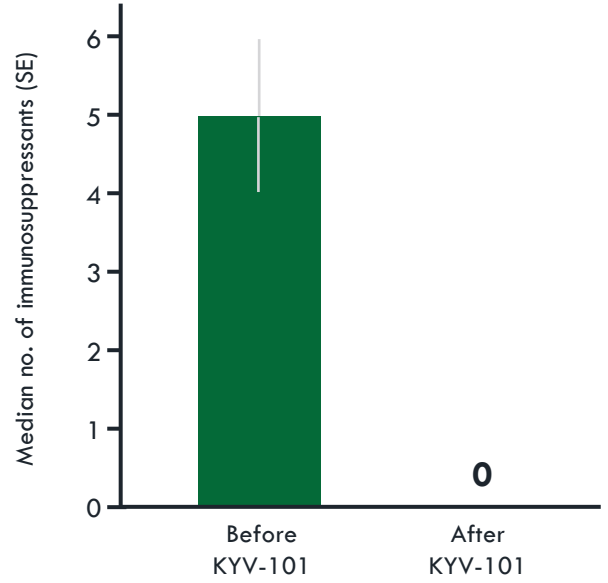
Reduction of Autoantibody Titers



Stabilization of Kidney Function



Elimination of Immunosuppressants*



*Data shown for immunosuppressant and immunomodulatory agents only; does not include physiologic replacement steroids ≤7.5 mg/day; †Baseline is day 0-14 for UPCR.
Note: named patient and KYSA study data; UPCR, urine protein creatinine ratio; EGFR, estimated glomerular filtration rate.
KYV-101 therapeutic dose is 1×10^8 CAR T cells/µL. Data cutoff October 31, 2024.
Reference: Kyverna Symposium at ACR Convergence, November 18, 2024. Washington, DC.

KYV-101: Driving Durable Remissions at Therapeutic Dose

First SPS patient

>15 months[2,3]

First MG patient

>19 months[1,2]

First LN patient

>12 months[2,4]

Free of active disease and off immunosuppressants and glucocorticoids

Note: named patient data.
KYV-101 therapeutic dose is 1×10^8 CAR T cells/µL.
References: 1. Haghikia A, et al. Lancet Neurol. 2023;22:1104-5. 2. Unpublished data. 3. Faissner S, et al. PNAS. 2024;21:e2403227121. 4. Kyverna Symposium. ACR Convergence. November 18, 2024. Washington, DC.

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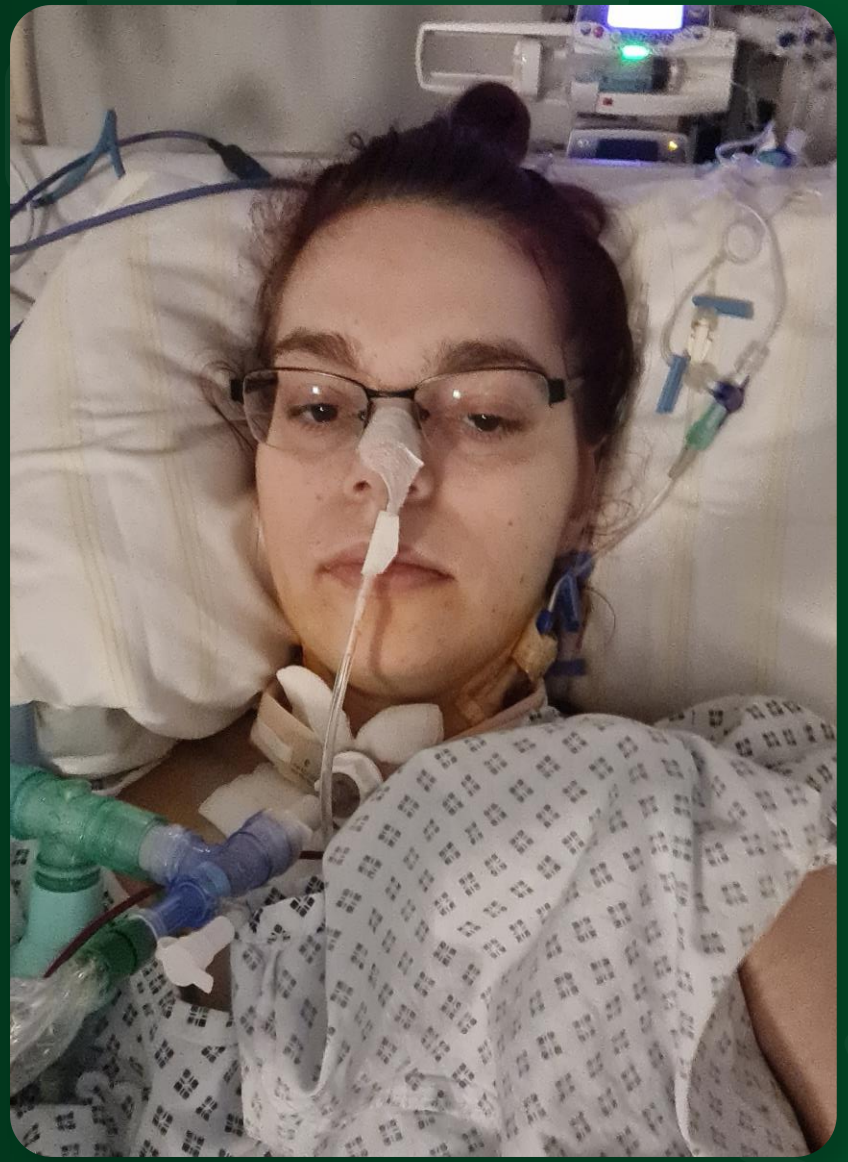


Uncontrollable Myasthenia Gravis

Recurrent Flares

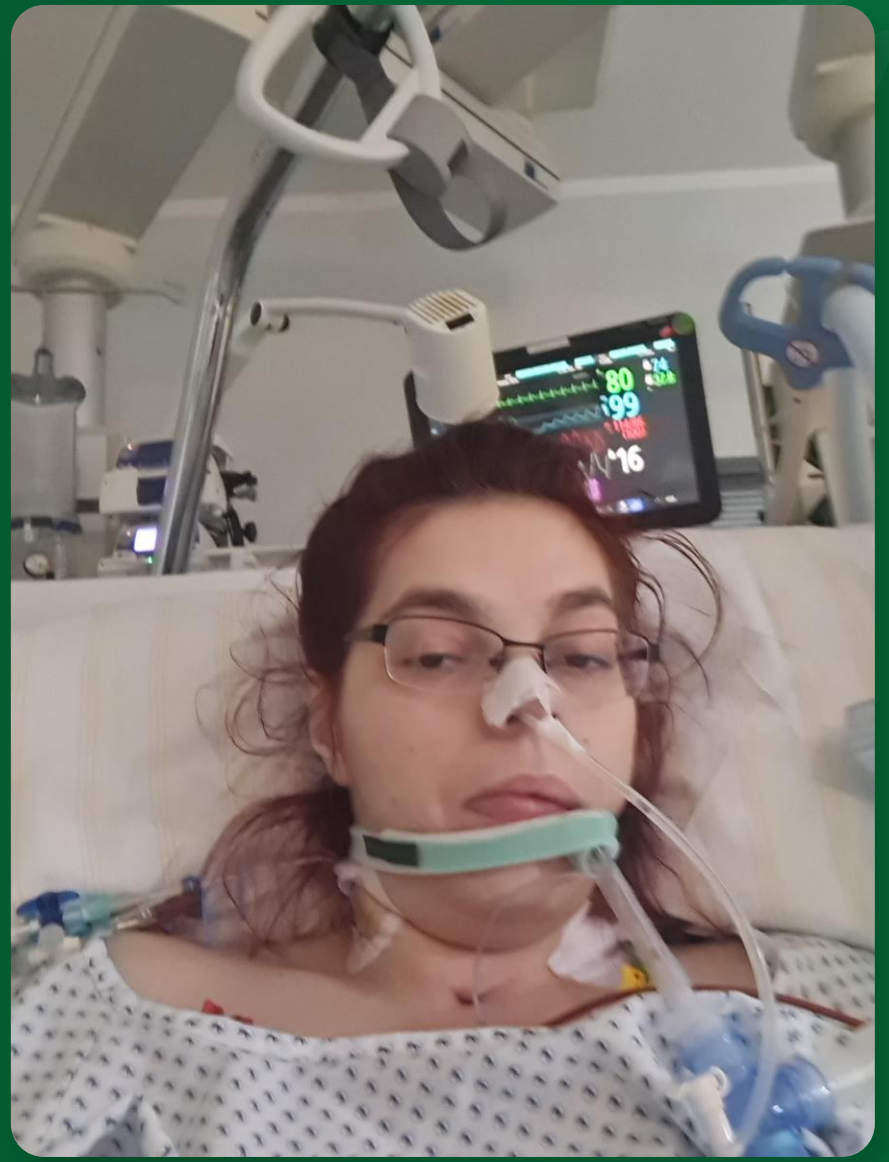
Frequent Hospitalizations

Intubations

Tracheostomy

Feeding Tube

Denise,
MG Warrior



Dosed with KYV-101


No Medications
No Active Disease
>19 Months Disease Free

Reimagining the Next Generation of CAR T Patient Delivery with KYV-102

No Apheresis, Reduces Costs, Improves Patient Access

KYV-101

Begins with apheresis

7-10 day culture time

KYV-102

Ingenui-T Process

Begins with whole blood – no need for apheresis

<3-day culture time

TARGETED BENEFITS

- Improve patient accessibility
- Reduce manufacturing turnaround time and costs
- Unlock system capacity
- Support expansion into new indications and patient populations
- Proprietary process

Unlocking Additional Patient Value with KYV-102

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Focused 2025 Pipeline Priorities

Opportunities to Expand into Additional Indications

	Indication	Candidate	Preclinical	Phase 1	Phase 2	Phase 3*	Regulatory Milestone
2025 Priorities	Stiff person syndrome	KYV-101	KYSA-8				RMAT, ODD
	Myasthenia gravis	KYV-101	KYSA-6				RMAT, ODD**, FTD
	Lupus nephritis	KYV-101	KYSA-1 & KYSA-3				FTD
	Whole Blood Next-Gen Process	KYV-102					
Future Opportunities	Multiple Sclerosis	KYV-101	KYSA-7, IITs				FTD
	Systemic Sclerosis	KYV-101	KYSA-5				ODD
	Multiple Indications	KYV-101	IITs				
	Allogeneic	KYV-201					

*Phase 3 may not be required if Phase 2 is registrational
Fast track designation does not assure that we will experience a faster development process, regulatory review or regulatory approval process compared to conventional FDA procedures.
ODD, orphan drug designation; FTD, Fast Track Designation
**EU & US

RMAT, Regenerative Medicine Advanced Therapy; ODD, Orphan Drug Designation; FTD, Fast Track Designation

KYV-101: Uniquely Designed for Autoimmune Diseases

KYV-101 Fully Human Design

Designed for POTENCY

- Differentiated CD19 with highly potent CD28 costimulation
- Deep B-cell depletion and immune reset

Engineered for SAFETY

- Fully human design
- No high-grade CRS or ICANS observed

Delivering TRANSFORMATIVE CLINICAL OUTCOMES

- "One and Done"
- Potential for outpatient administration

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KYV-101 is a Fundamentally Different Approach

Goals of KYV-101

SINGLE administration

DEEP B CELL DEPLETION and **IMMUNE RESET**

Transformative outcomes with **CURATIVE POTENTIAL**

ELIMINATION of chronic therapy

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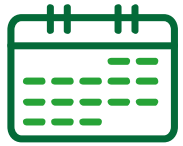
Near-Term Milestones to Drive Value Creation

Program	Milestones
Stiff Person Syndrome RMAT Designation	✣ Complete Pivotal Phase 2 Enrollment mid-2025 ✣ Report Topline Pivotal Phase 2 Data 1H 2026 ✣ BLA filing in 2026
Myasthenia Gravis RMAT Designation	✣ Confirm Registrational Path with Regulators 1H 2025 ✣ Report Interim Phase 2 Data 2H 2025
Lupus Nephritis	✣ Report Phase 1 Data 2H 2025
Future Pipeline	✣ File KYV-102 IND application 2H 2025

Cash Runway into 2027 Enables Achievement of Key Inflection Points

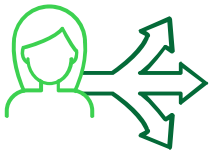
2025 Priorities to Rapidly Deliver KYV-101 to Market



Transformative year to support late-stage development and commercialization of KYV-101

On track to deliver the **FIRS T autoimmune CAR T approved** in neuroinflammatory disease with SPS BLA filing targeted for 2026

FAST-follow indications in MG and LN



Broaden patient access and **FURTHER unlock larger opportunities** through next-generation approaches, including KYV-102

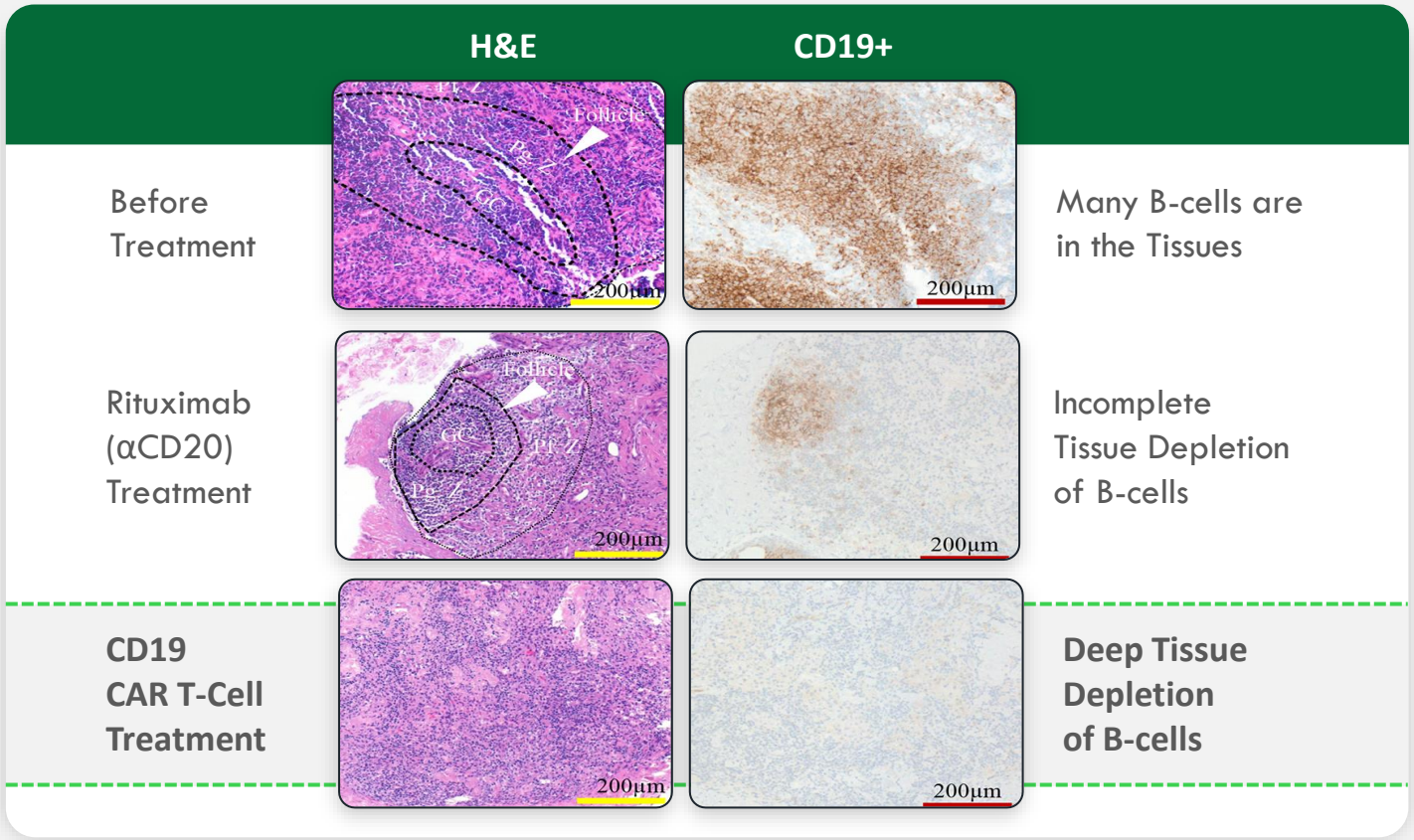
Cash runway into 2027 to deliver key milestones

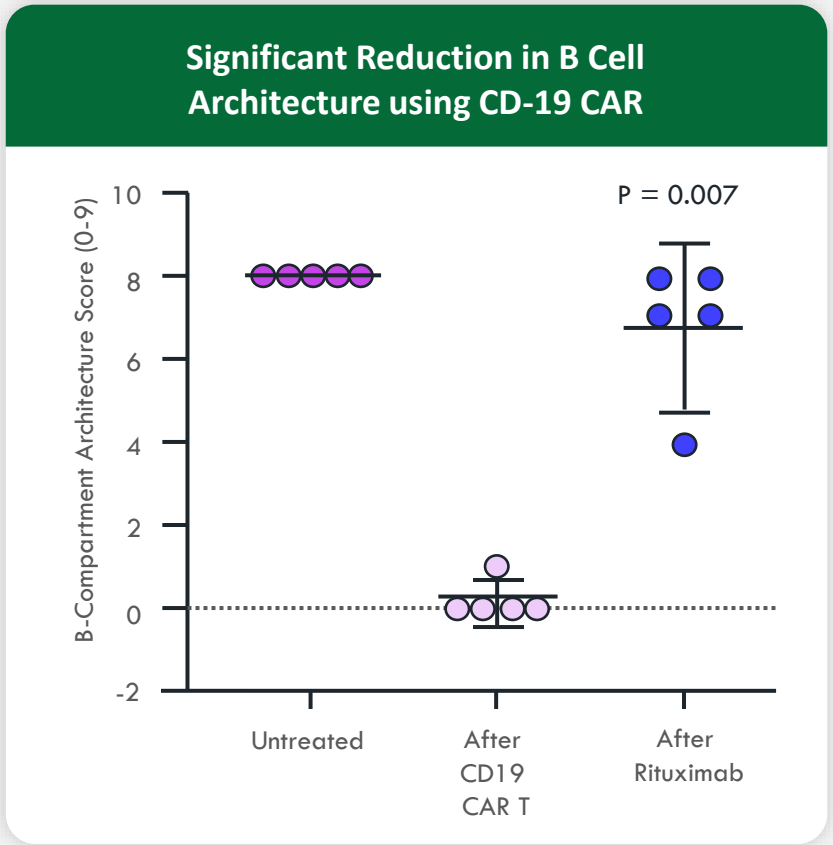
Appendix

Roger
Patient warrior

Targeting the Underlying Mechanism of Disease with CAR T

Anti-CD19 CAR T therapy deeply depletes B cells in blood and tissues and disrupts B cell follicular architecture, with the aim of triggering an immune reset





Tur C, et al. *Ann Rheum Dis.* 2024 Sep 11;0:1–8:ard-2024-226142.

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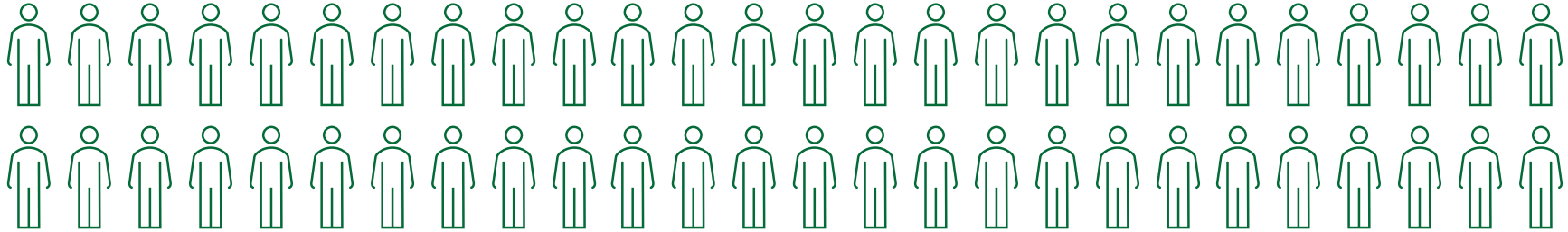
KYSA Trials Position KYV-101 on Rapid Path to Market in Priority Indications

	KYSA-8	KYSA-6	KYSA-1 KYSA-3
	Stiff Person Syndrome	Myasthenia Gravis	Lupus Nephritis
Study Name	KYSA-8	KYSA-6	KYSA-1 & KYSA-3
Location	US	US & EU	US & EU
Study Phase	Phase 2	Phase 2	Phase 1
NCT	NCT06588491	NCT06193889	NCT05938725 & NCT06342960
Anticipated Enrollment	25 Patients	20 Patients	9 Patients
Primary Endpoints	Change in T25FW at 16 weeks	MG-ADL at 24 weeks	Safety and tolerability
2nd Endpoints	Stiffness index at 16 weeks, Hauser ambulation index	QMG score, MGC composite score	Evaluate efficacy PK/PD of KYV-101

Kyverna's Leading Patient Experience with KYV-101

50+
Autoimmune
Patients

Across diverse indications treated with KYV-101[1]



15+
Autoimmune
Indications

Broad indication experience builds market opportunity with KYV-101

- Stiff person syndrome
- Myasthenia gravis
- Multiple sclerosis
- NMOSD
- CIDP
- Rheumatoid arthritis
- Systemic sclerosis
- Lupus nephritis
- ANCA-associated vasculitis
- And others

1) as of October 31, 2024.

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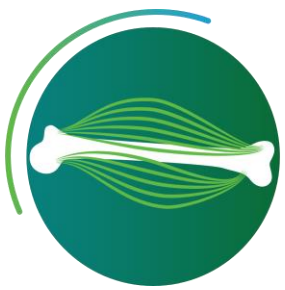
Initially Focused on Three Indications with High Unmet Need; Potential for KYV-101 to Deliver Differentiated Benefit

	SPS  RMAT	MG  RMAT	LN 
	Lead indication, establishes commercial infrastructure	Transformative outcomes in established market	Significant area of Unmet need
Total addressable US market	2,000 - 6,000	80,000 – 100,000	70,000 – 100,000
Initial CAR T addressable US market	1,500-2,500 (IVIG treated) or 400-700 (IVIG failure)	30,000 – 40,000	15,000 – 40,000
Strategic rationale	• RMAT designation • Potential for 1st CAR T approved in autoimmune	• RMAT designation with fast-follow intent • Synergistic commercial infrastructure to SPS	• Focused approach to address highest value patients in LN • Provides path to Rheumatology

SPS market size source: Analysis of Komodo Health claims data; Yi J, et al. Neurol. Neuroimmunol. Neuroinflamm. (2022); Dalakas MC. Neurol. Neuroimmunol. Neuroinflamm. (2023)
MG market size source: Analysis of Komodo Health claims data; GlobalData MG Forecast 2022; Bubuioc A, et al. J. Med. Life. (2021); ICER MG Report 2021; Oosterhuis HJ. J. Neurol. Neurosurgeon. Psichiatry. (1989); ADAPT trial data
LN market size source: GlobalData SLE Forecast 2021; Hocaoglu M, et al. Arthritis Rheumatol. (2023) (LUMEN Study); Helmick CG, et al. Arthritis & Rheumatism. (2008); Gasparotto M, et al. Rheumatology. (2020)

Proven Leadership Team with Significant CAR T and Autoimmune Experience

Leadership Team

Warner Biddle
Chief Executive Officer

Cara Bauer
Chief Human Resources Officer

Tom Van Blarcom, PhD
Senior Vice President and Head of Research

Dominic Borie, MD, PhD
President, Research and Development

Benjamin Dewees, RAC
Vice President of Global Regulatory Affairs

Sham Dholakia, MD
Chief Product Officer

Ryan Jones, MBA
Chief Financial Officer

Dan Maziasz
Chief Business Officer

Tracy Rossin
Senior Vice President, Corporate Affairs, Communications and Investor Relations

Karen Walker
Chief Technology Officer

Board of Directors

Ian Clark
Chairperson and Independent Director

Mert Aktar
Independent Director

Warner Biddle
Chief Executive Officer

Fred Cohen, MD
Independent Director

Steve Liapis, PhD
Independent Director

Beth Seidenberg, MD
Independent Director

Christi Shaw
Independent Director

Dan Spiegelman
Independent Director

Strong Financial Position to Deliver Key Milestones

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