Kyverna Therapeutics

HARNESSING THE POWER OF CELL THERAPY IN AUTOIMMUNE DISEASE

December 2024





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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 these trials and 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 investigator-initiated trials or named patient activities in our applications for marketing approval to the U.S. Food and Drug Administration or other foreign regulatory agencies, we believe that this strategy may provide some competitive advantage as we will be able to acquire additional clinical insights beyond highly focused clinical trials in specific geographies.





Goal: Durable clinical response and withdrawal of immunosuppressive medications

Before CAR-T

- → Refractory to several lines
- → Toxic chronic therapies

Aim of CAR T-cell therapy

- → + Immune reset
- + Free of chronic medications

Autoimmune Diseases Represent a Large, Under-served Market

Autoimmune diseases prevalence high and increasing (80+ different diseases)

Autoimmune diseases affect 8% of people in the U.S.¹, with prevalence increasing YoY

Autoimmune disease large and growing market

Currently marketed products: >\$80B revenue²

Current treatments inadequate for patients long-term

Current therapies:

- + Low rates of remission
- → Serious long-term side effects

B Cell-Driven Diseases	Estimated Number of Diagnosed Patients in US + EU + Japan ³
Rheumatoid Arthritis	4,700,000
Multiple Sclerosis	1,520,000
Sjogren's Disease	750,000
Systemic Lupus Erythematosus (SLE)	560,000
Systemic Sclerosis	200,000
Lupus Nephritis	160,000
Myasthenia Gravis	160,000
Inflammatory Myositis	120,000
ANCA-Associated Vasculitis	100,000
Neuromyelitis Optica	20,000
Total	~8.3 Million Patients

Note: 1. National Institutes of Health (NIH) Autoimmune Diseases Coordinating Committee. Progress in Autoimmune Diseases Research (Publication No. 05–5140). March 2005. 14, Accessed date: October 25, 2022; 2. GlobalData 2021; 3. Published literature through GlobalData market analysis reports and internal data 2022



Working with Leaders and Trailblazing the Autoimmune CAR-T Field

Autoimmune CAR-T Milestones



BRUDNO1 2020

20 patients with B-cell malignancies treated with **KYV-101** construct



SCHETT² 2021 1st autoimmune disease patient treated (lupus nephritis)



HAGHIKIA³ 2023 1st neuroinflammatory disease patient treated (KYV-101 in myasthenia gravis)



SCHETT⁴ 2024 Single-center case series in rheumatology

2024

2018

Kyverna Founded

Demonstrated Safety & Feasibility with KYV-101 in **B-cell Malignancy**

1st to Tackle **Autoimmune** Disease

Partnered with NIH to Deliver KYV-101



1st Company To Dose Autoimmune Patient

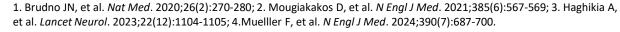


Largest Clinical Experience Using KYV-101

Differentiated with RMAT and FASTRACK **Designations**

Kyverna **Milestones** **Fully Human CD-19**

Best Access for Patients with Global Clinical Trial and Manufacturing

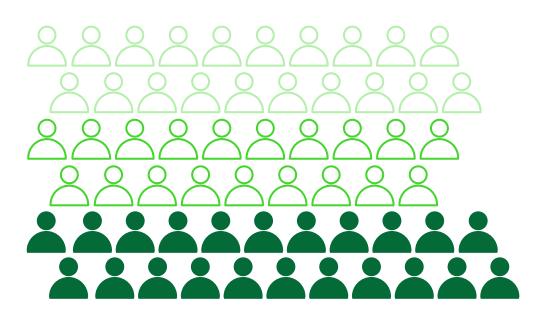




Kyverna's Leading Patient Experience with KYV-101

50+ Autoimmune Patients

Across diverse indications treated with KYV-101



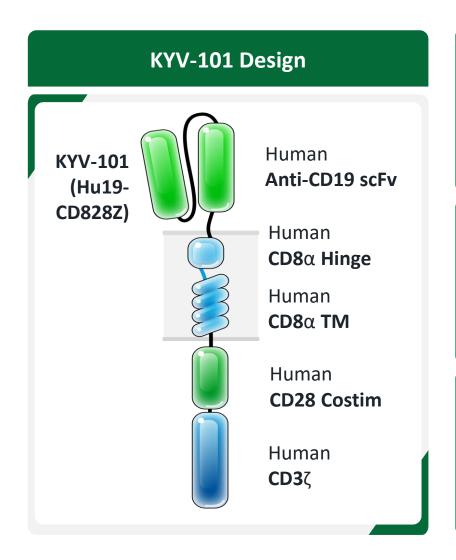
15+ Autoimmune Indications

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



KYV-101: Uniquely Designed to Impact the Unmet Need in Autoimmune Disease



Designed for **POTENCY**

- → The only construct with highly potent CD28
- + Maximal B-cell depletion and immune reset ability

Potential for
TRANSFORMATIVE
EFFICACY

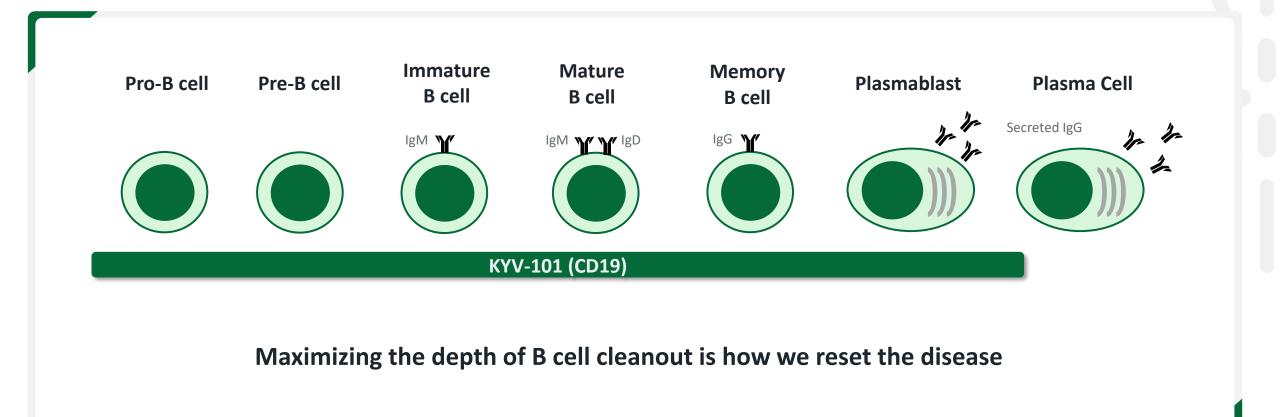
- + Largest clinical experience across **15+ indications**
- → Potential life-changing efficacy in refractory patients
- + "One and Done" impacting chronic disease

Engineered for **SAFETY**

- → Unique CAR designed to minimize toxicity
- → Fully human single-chain variable fragment
- + CD8 α hinge and TM domains



Differentiated Broad Impact of KYV-101: The Value of CD19



CD19-targeted depletion eliminates the broadest range of B-cell subsets showing promising efficacy while preserving humoral immunity



Leading Pipeline Recognized for Addressing Clinical Unmet Need

Actively enrolling studies in the US and Europe

Technology	Candidates	Target	Indication	Discovery / Validation	Preclinical	Clinical Phase 1	Clinical Phase 2	Clinical Phase 3	Regulatory Milestone
Autologous CAR T	KYV-101 Rheumatology	CD19	Lupus nephritis	KYSA-I	Phase 1/2				Fast Track
			Systemic sclerosis	KYSN-5 🍧	Phase 1/2				ODD
	KYV-101 Neurology	CD19	Myasthenia gravis	KYSN-6 🚔	Phase 2				ODD, RMAT
			Multiple sclerosis	KÝSA-7 🝧	Phase 2				Fast Track
			Stiff person syndrome	күза-8 簟	Phase 2				ODD, RMAT
Allogeneic CAR T	KYV-201	CD19	Multiple						

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. CAR, chimeric antigen receptor; FDA, Food and Drug Administration; ODD, orphan drug designation; RMAT, regenerative medicine advanced therapy.



KYV-101 in Neuroinflammatory Diseases



Presented Case Reports - Company Symposium at ECTRIMS 2024 **KYV-101 Shows Promising Efficacy in Stiff-Person Syndrome**

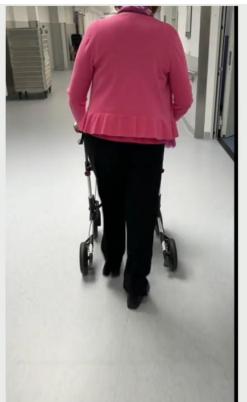


Bedbound, **Unable to Bend Legs and Turn With Aids**

Able to Walk

Able to Walk Unaided without Fear of Falling







Pre-infusion

4-6 Months Post

8 Months Post



At 1 year after KYV-101:

- -- Reduced stiffness
- -- Improved mobility
- → Stable gait
- Better walking speed
- → 90% reduction in anti-GAD antibody



Immune Reset Leading to Durable Treatment Response

Schett Experience

First CAR T SLE patient at >3 years¹⁻³

- Disease free
- No serious adverse events
- Off immunosuppressants and glucocorticoids
- → B cells repopulated as of day 148





First KYV-101 MG patient at 15 months^{4,5}

- Disease free
- No serious adverse events
- Off immunosuppressants and glucocorticoids
- → B cells repopulated as of day 132





Second KYV-101 MG patient at 12 months⁵

Disease free

Kyverna Experience

- No serious adverse events
- Off immunosuppressants and glucocorticoids
- B cells repopulation pending as of month 10





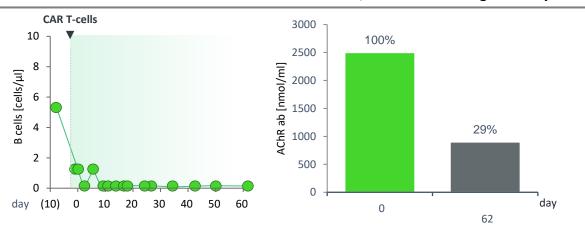
Note: named patient data; CAR, chimeric antigen receptor; MG; myasthenia gravis; SLE, systemic lupus erythematosus.

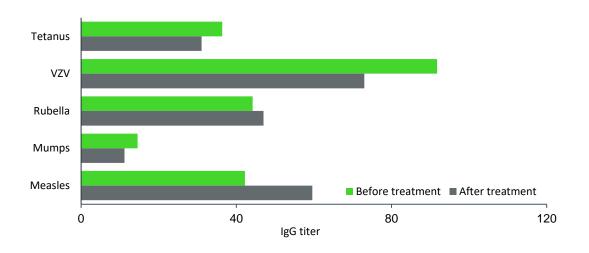
1. Mougiakakos D, et al. N Engl J Med. 2021;385:567-569. 2. Taubmann J, et al. EULAR 2023, Abstract OP0141. Ann Rheum Dis. 2023;82:93-94. 3. World exclusive: CAR-T cell therapy successfully used against autoimmune disease. https://www.fau.eu/2021/08/11/news/research/world-exclusive-car-t-cell-therapy-successfully-used-against-autoimmune-disease/. 4. Haghikia A, et al. Lancet Neurol. 2023;22:1104-5. 5. Unpublished data.



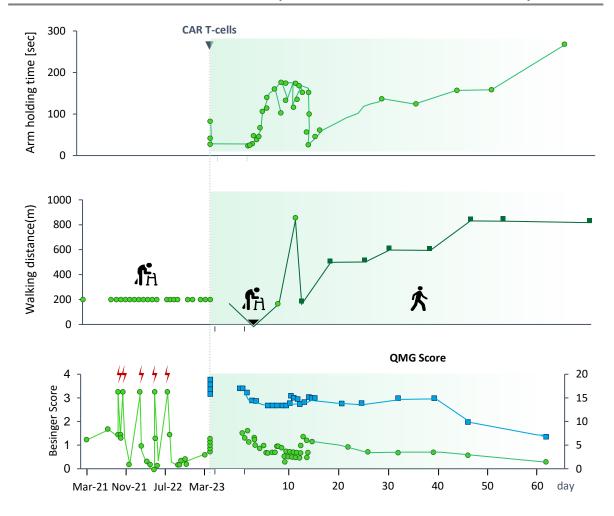
Published Case Reports – Lancet Neurology Within 60 Days Of Infusion, Observed Improved Symptoms and Mobility in Myasthenia Gravis

Observed dramatic reduction in AChR-ab serum levels, while maintaining antibody titers



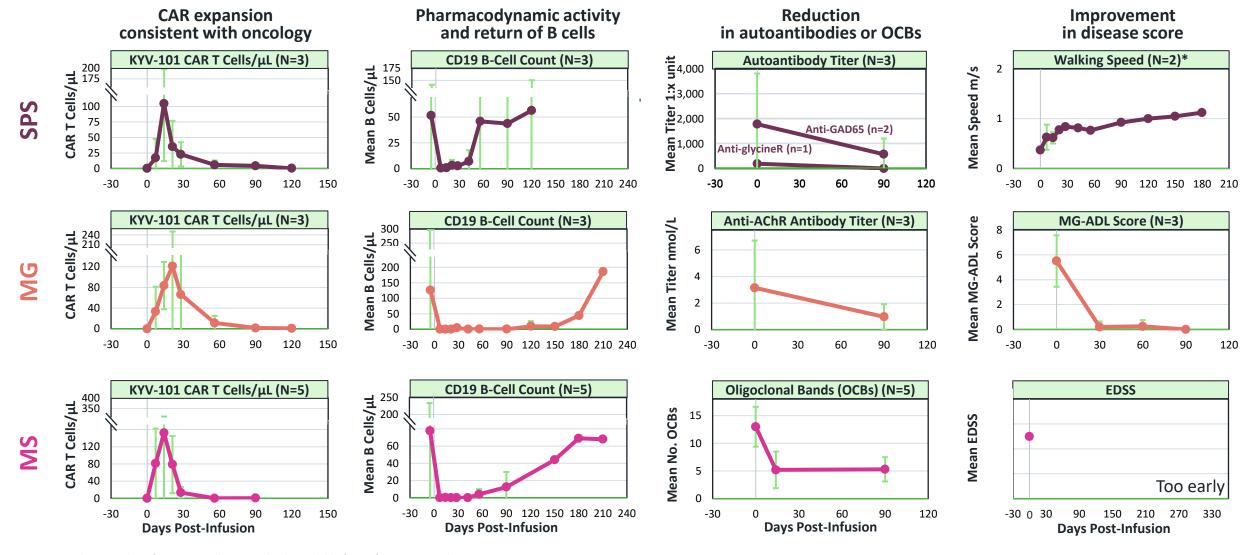


After 5 ICU admissions in 18 months, improvement in QMG score and mobility observed





Presented Case Reports – Company Symposium at ECTRIMS 2024 Promising PK, Biomarker and Efficacy Data for KYV-101 in Neuroinflammatory Diseases



Note: named patient data; * Data on walking speed only available for 2 of 3 patients with SPS.

ADL, activities of daily living; CAR, chimeric antigen receptor; MG, myasthenia gravis; MS, multiple sclerosis; OCB, oligoclonal band; SPS, stiff-person syndrome.



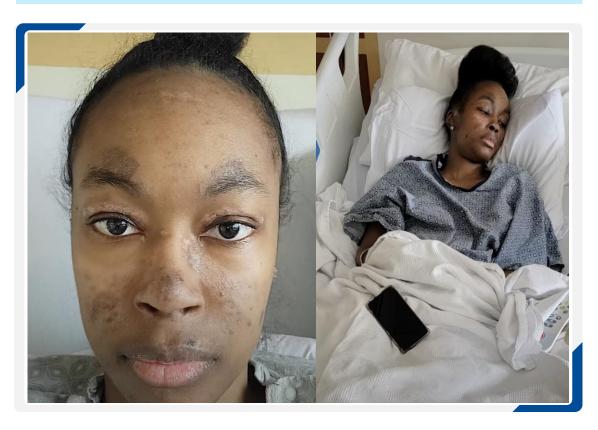
KYV-101 in Rheumatologic Diseases



Leading the Way to Life Changing Impacts for Patients

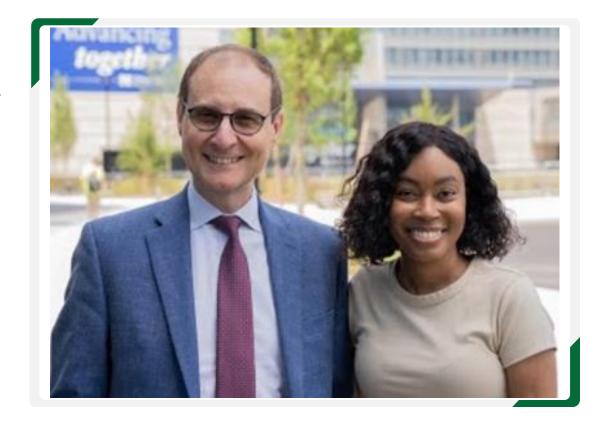
Before KYV-101

- Severe Disease
- Rash
- SLEDAI score 27

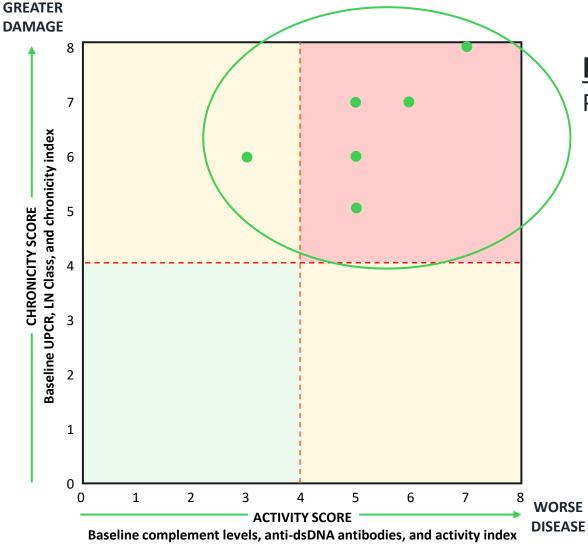


After KYV-101

- Disease Free
- No immunosuppressants
- No glucocorticoids



KYV-101 Refractory LN Patients Have High Disease Activity and Kidney Damage



KYV-101 100M Target Dose

Patient Baseline Characteristics

- Refractory LN patients experience uncontrolled inflammation and accumulated kidney damage
- → KYV-101 patients have particularly high baseline disease activity and kidney damage
 - Activity: Low complement, high levels of anti-dsDNA antibodies, and high activity indices by biopsy
 - Chronicity: High levels of proteinuria, Class II-V histology, and high chronicity indices by biopsy



KYV-101: Treatment of Heavily Pretreated LN Patients

Demographic summary of patients receiving 1×10⁸ CAR T-cells

Patient Characteristic	N=6	
Age (Range)	29 – 55 years	
Sex (Female : Male)	4:2	
Prior Lines Of Therapy	3 – 7	
SLEDAI-2K	8 – 27	
Histologic Class of Nephritis (WHO)	II – V	
UPCR (Range)	1.4 – 8.0	

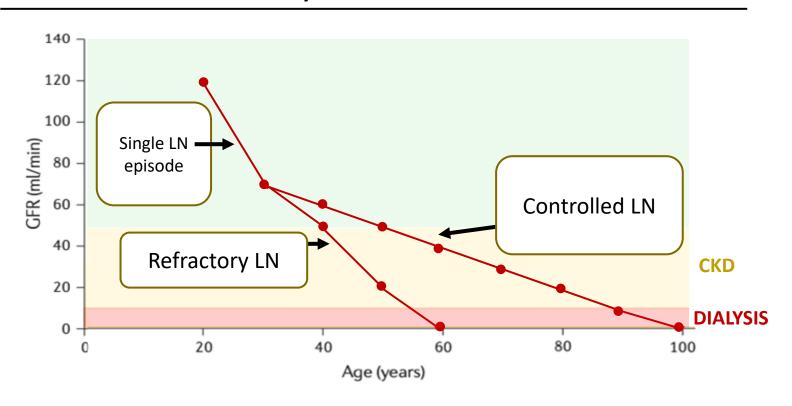
4 of 6 patients with ≥6 months follow up included in efficacy analysis

2 of 6 patients with <2 months follow up not in efficacy analysis (too short follow-up to assess efficacy)



Steep Loss of Kidney Function in Refractory Lupus Nephritis

Loss of Kidney Function in LN Over Time¹



- → Despite therapy, patients progress with eGFR decline and loss of Kidney Function
- → Single episodes can impact the slope of decline significantly
- → Risk of Dialysis, Kidney
 Transplantation and Death
 increase, as eGFR declines

30% with progressive eGFR loss despite treatment²



KYV-101: Potential to Redefine Success in Lupus Nephritis

1. Preservation of Kidney Function



- Stabilization of eGFR
- Decreasing Proteinuria
- Avoiding Dialysis

2. Improvement in SLE



- Decrease in SLEDAI
- Decrease in anti-dsDNA
- Normalization of complement

3. Reduction or Elimination of Therapy



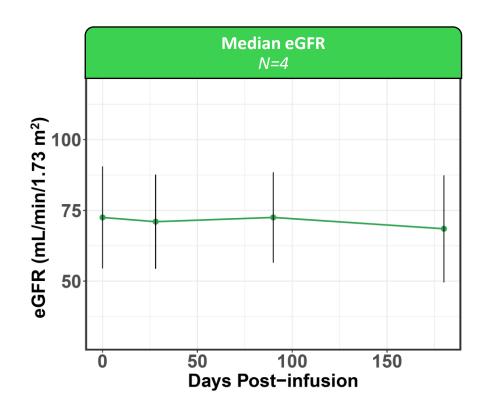
- No immunosuppressants
- No or physiological glucocorticoids

After a single infusion of KYV-101 (1×10^8 CAR T cells), none of the patients require active treatment for LN

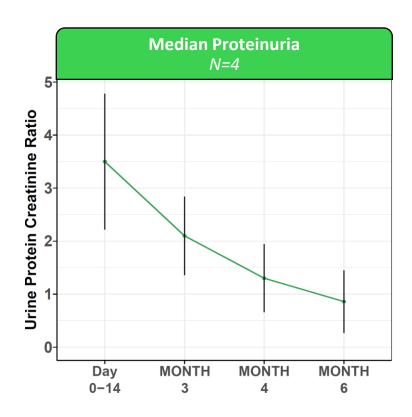


Pillar 1: KYV-101 Potential for Preservation of Kidney Function

Stable and Durable Kidney Function



Clinically Meaningful Decline in Proteinuria



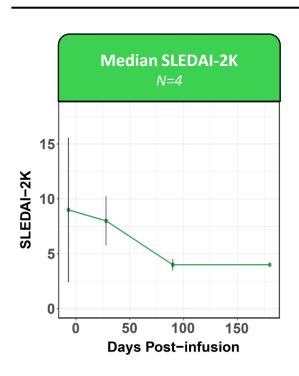


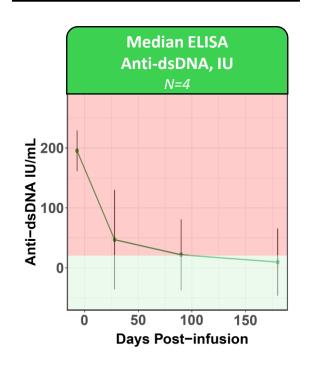
Pillar 2: KYV-101 Potential for Improvement of SLE

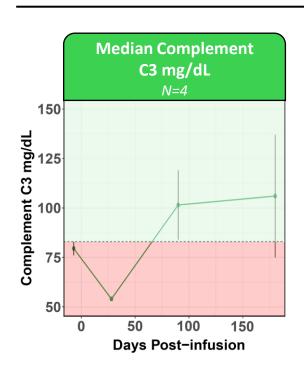
Reduction in SLEDAI Score

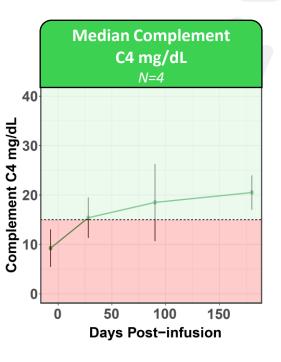
Reduction in Autoantibodies

Normalization of Complement





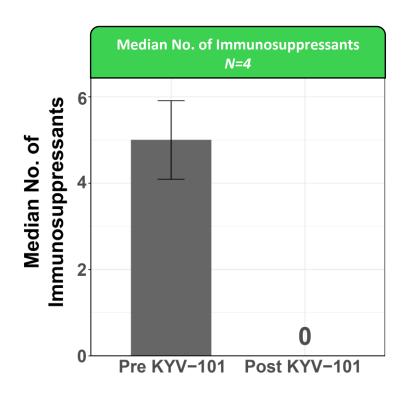






Pillar 3: KYV-101 Potential to Eliminate Immunosuppressants

Eliminating Immunosuppressants



Reducing Glucocorticoids to Physiological Levels





KYV-101: Potential for Immune System Reset in Lupus Nephritis

UNMET NEED

LN is a severe condition with high risk to develop kidney failure

PROMISE OF KYV-101

KYV-101 achieves potential for significant progress in the treatment of LN via:

- Preserving kidney function
- Improving SLE activity

- Eliminating immunosuppression
- Predictable and robust safety profile

NEXT STEPS

KYSA-1 and KYSA-3 continuing to enroll and treat patients in order to bring a **new, transformative treatment option** to patients with LN



KYV-101 Combined Experience



KYV-101: Potential for Predictable, Well Tolerated, and Robust Safety Profile in First 50 Patients Across Different Autoimmune Diseases

KYV-101 All 15+ AID indications

RHEUMATOLOGY

- Rheumatoid arthritis
- Systemic sclerosis
- Lupus nephritis
- ANCA-associated vasculitis
- Anti-Synthetase Syndrome
- And others

NEUROLOGY

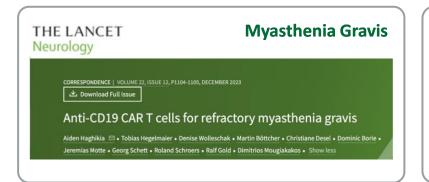
- Stiff-person syndrome
- Myasthenia gravis
- Multiple sclerosis
- NMOSD
- CIDP
- And others

Indication Category	CRS	ICANS		
maication category	Grade 3/4	Grade 2–4		
Neuroimmunology	0	0		
Rheumatology	0	0		
Other Autoimmune	0	0		

No grade 3/4 CRS and no grade 2-4 ICANS observed across 50+ patients dosed

Observed CRS and ICANS events were transient, low-grade, and manageable

KYV-101 Published Case Reports Lead the Clinical and Scientific Advancement of the Field





Cell²ress

Med





CD19-targeted chimeric antigen receptor T cell therapy in two patients with multiple sclerosis

Felix Fischbach, 1.6 Johanna Richter, 2.6 Lena Kristina Pfeffer, 1.6 Boris Fehse, 2 Susanna Carolina Berger, 2 Stefanie Reinhardt, ¹ Jens Kuhle, ³ Anita Badbaran, ² Kristin Rathje, ² Nico Gagelmann, ² Dominic Borie, ⁴ Johan Seibel, Francis Ayuk, Manuel A. Friese, Christoph Heesen, 1,* and Nicolaus Kröger^{2,7,*}





BRIEF REPORT IMMUNOLOGY AND INFLAMMATION

OPEN ACCESS

Successful use of anti-CD19 CAR T cells in severe treatment-refractory stiff-person syndrome

Simon Faissner^{a,1,2} (1), Jeremias Motte^{a,1} (2), Melissa Sgodzai^{a,1}, Christian Geis^b (3), Aiden Haghikia^c (1), Dimitrios Mougiakakos^d, Dominic Borie^c (1) Roland Schroers^{f,2} , and Ralf Gold^{8,2}

Neuron

Treatment of concomitant myasthenia gravis and Lambert-Eaton myasthenic syndrome with autologous CD19-targeted CAR T cells

Highlights

- Anti-CD19 CAR T cell therapy led to clinical recovery in two cases of MG and LEMS
- · Patients regained full mobility, with ongoing recovery 4- and 6-months post infusion
- Deep B cell depletion and normalization of pathogenic autoantibodies was observed
- · Application of anti-CD19 CAR T cells was safe, with manageable side effects

Myasthenia Gravis & LEMS

Jeremias Motte, Melissa Sgodzai, Christiane Schneider-Gold, Dimitrios Mougiakakos, Roland Schroers, Ralf Gold

Correspondence

roland.schroers@rub.de (R.S.). ralf.gold@rub.de (R.G.)

Rheumatoid Arthritis & Myasthenia Gravis

Annals of the

Rheumatic Diseases

Clinical efficacy and autoantibody seroconversion with CD19-CAR T cell therapy in a patient with rheumatoid arthritis and coexisting myasthenia gravis

Aiden Haghikia 1, Tobias Hegelmaier 1, Denise Wolleschak 2, Martin Böttcher 2, 3, Vaia Pappa 1, Jeremias Motte 4, Dominic Borie 5, Ralf Gold 4, (b) Eugen Feist 6, (b) Georg Schett 7, 8, (b) Dimitrios

Correspondence to Professor Dimitrios Mougiakakos, Department of Hematology, Oncology, and Cell Therapy,

Otto-von-Guericke-University Magdeburg, Magdeburg, Germany; dimitrios.mougiakakos@med.ovgu.de; Professor Aiden Haghikia, Department of Neurology, Otto-von-Guericke-University Magdeburg, Magdeburg, Germany; aiden.haghikia@med.ovgu.de

CAR T in Autoimmunity Review Article

nature reviews immunology

Chimeric antigen receptor T cell therapy for autoimmune disease

James B. Chung ¹, Jennifer N. Brudno ², Dominic Borie ¹ & James N. Kochenderfer ² ⊠



KYV-201 and Ingenui-T

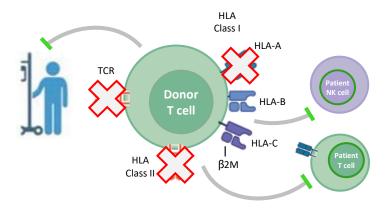


Allogeneic KYV-201 Protection from T Cells Supports Potential for Longer-term Persistence

Differentiated allogeneic platform based 3 genetic deletions

TCR KO + HLA-A KO + pan HLA Class II

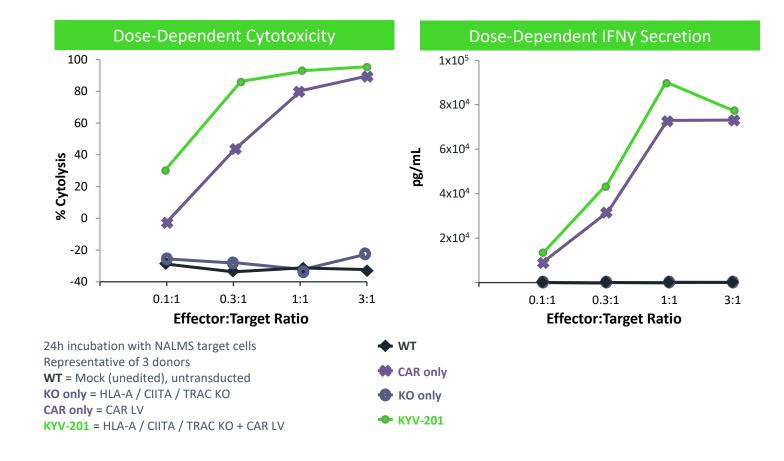
Genetic deletion of the TCR avoids GvHD TRAC KO Partial genetic deletion of HLA inhibits NK cells HLA-A-KO



Intelia
THERAPEUTICS

Match remaining HLA Class I alleles between donor and patient HLA-B and HLA-C matching

KYV-201 demonstrates robust CAR-mediated activity against CD19⁺ cells Similar to HLA Class I deficient b2M KO¹

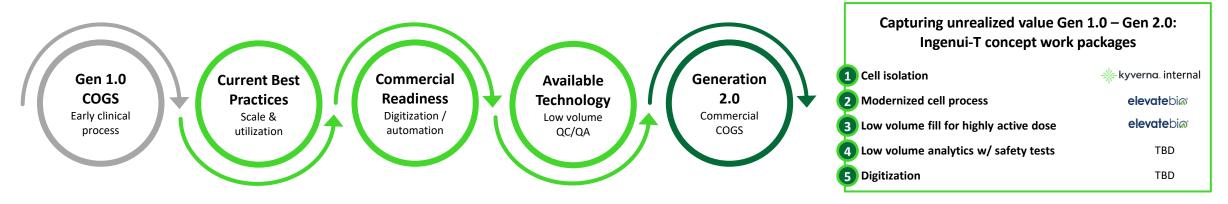






Kyverna's Ingenui-T Process Leverages Industry Leaders to Target Pharma-like COGS

Evolution of the Autologous Process: KYV-101 Gen 1.0 to Ingenui-T



Key Component	Kyverna's Approach	cogs	Supply Chain	Speed
Manufacturing and supply chain partnerships	 → ElevateBio's BaseCamp for process development and cell product manufacturing → Oxford Biomedica supply agreement, enabling use of LentiVector 	√	√	
Pharma-like COGS	 → Foundation of industry-best practices → ElevateBio and other processes to streamline COGS 	√	✓	√



Corporate



Strong Financial Position Provides Runway to Multiple Potential Value Inflection Catalysts

Successful IPO in February 2024 – secures Kyverna's leadership position in autoimmunity





Proven Leadership Team with Significant CAR T and Autoimmune Experience

Leadership Team



Warner Biddle
Chief Executive Officer



Karen Walker Chief Technology Officer



Dominic Borie, MD, PhD
President, Research and
Development



Ryan Jones, MBA Chief Financial Officer



Dan Maziasz Chief Business Officer



Cara Bauer
Chief Human
Resources Officer



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



Tracy Rossin

Senior Vice President,
Corporate Affairs,
Communications and
Investor Relations



Sunetra Biswas, PhD
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Program Lead



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Independent Director

Mert Aktar

Independent Director

Ian Clark

Chairperson and Director

Warner Biddle

Chief Executive Officer



Kyverna's Near-term Events in the Coming Quarters

Key Meeting



✓ ACR Washington DC

JPMorgan Conference San Francisco

Date

September 2024

November 2024

January 2025

What to Expect

Discussion of neurological case reports

Symposium at 5:15pm CET Wednesday Sep 18, 2024

Continuation of rheumatological dataset

Symposium at 5:45pm EST Monday Nov 18, 2024

Long-term plan and upcoming catalysts in rheum & neuro



