# **UNITED STATES** SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

# FORM 8-K

CURRENT REPORT Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): March 6, 2024

# Keros Therapeutics, Inc. (Exact name of registrant as specified in its charter)

Delaware (state or other jurisdiction of incorporation) 001-39264 (Commission File Number)

81-1173868 (I.R.S. Employer Identification No.)

1050 Waltham Street, Suite 302

Lexington, Massachusetts (Address of principal executive offices)

Registrant's telephone number, including area code: (617) 314-6297

Not applicable

(Former name or former address, if changed since last report.)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425) 

Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12) 

Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

02421 (Zip Code) Securities registered pursuant to Section 12(b) of the Act:

| Title of each class                        | Trading<br>Symbol | Name of each exchange<br>on which registered |
|--|-------------------|--|
| Common Stock, \$0.0001 par value per share | KROS              | The Nasdaq Stock Market LLC                  |

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company  $\Box$ 

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

### Item 7.01 Regulation FD Disclosure.

On March 6, 2024, Keros Therapeutics, Inc. (the "Company") updated its corporate presentation for use in meetings with investors, analysts and others. The presentation is available through the Company's website and a copy is attached as Exhibit 99.1 to this Current Report on Form 8-K.

The information under Item 7.01 in this Current Report on Form 8-K, including Exhibit 99.1 attached hereto, is being furnished and shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act") or otherwise subject to the liabilities of that section. Such information and the accompanying Exhibit 99.1 are not incorporated by reference in any filing of the Company under the Securities Act of 1933, as amended, or the Exchange Act, whether made before or after the date hereof, regardless of any general incorporation language in such filing, except as shall be expressly set forth by specific reference in such filing.

Description

### Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

<u>99.1</u> 104

### Exhibit No.

Corporate Presentation dated March 2024.

Cover Page Interactive Data File (the cover page XBRL tags are embedded within the Inline XBRL document)

### SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

### KEROS THERAPEUTICS, INC.

By:

/s/ Jasbir Seehra Jasbir Seehra, Ph.D. Chief Executive Officer

Dated: March 6, 2024



# Disclaimer

Statements contained in this presentation regarding matters that are not historical facts are "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, as amended. Words such as "anticipates," "believes," "expects," "intends," "plans," "potential," "projects," "would" and "future" or similar expressions are intended to identify forward-looking statements. Examples of these forward-looking statements include statements concerning: Keros' expectations regarding its growth, strategy, progress and the design, objectives, expected results and timing of its preclinical studies and clinical trials for KER-050, KER-012 and KER-065, including its regulatory plans; the potential of Keros' proprietary discovery approach; and the potential of KER-050 to treat obesity without an associated loss of muscle and potential for frailty, both as a monotherapy and in combination with GLP-1 receptor agonists. Because such statements are subject to risks and uncertainties, actual results may differ materially from those expressed or implied by such forward-looking statements. These risks and uncertainties include, among others: Keros' limited operating history and historical losses; Keros' ability to raise additional funding to complete the development and any commercialization of its product candidates, KER-050, KER-012 and KER-065; that Keros may be delayed in initiating, enrolling or completing any clinical trials; competition from third parties that are developing products for similar uses; Keros' ability to obtain, maintain and protect its intellectual property; and Keros' dependence on the success of its intellectual property; and Keros' dependence on third parties in connection with manufacturing, clinical trials and preclinical studies.

These and other risks are described more fully in Keros' filings with the Securities and Exchange Commission ("SEC"), including the "Risk Factors" section of the Company's Annual Report on Form 10-K, filed with the SEC on February 28, 2024, and its other documents subsequently filed with or furnished to the SEC. All forward-looking statements contained in this presentation speak only as of the date on which they were made. Except to the extent required by law, Keros undertakes no obligation to update such statements to reflect events that occur or circumstances that exist after the date on which they were made.

Certain information contained in this presentation relates to or is based on studies, publications, surveys and other data obtained from third-party sources and the Company's own internal estimates and research. While we believe these third-party sources to be reliable as of the date of this presentation, it has not independently verified, and makes no representation as to the adequacy, fairness, accuracy or completeness of, any information obtained from third-party sources. Finally, while we believe our own internal research is reliable, such research has not been verified by any independent source.

The trademarks included in this presentation are the property of the owners thereof and are used for reference purposes only.

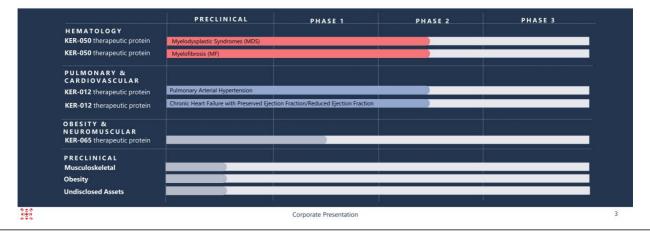
Corporate Presentation

# Focused on Transforming the Lives of a Wide Range of Patients with Disorders Linked to Dysfunctional TGF-β Superfamily Signaling

### Keros is a clinical-stage biopharmaceutical company

Developing potentially differentiated product candidates designed to alter transforming growth factor-beta (TGF- $\beta$ ) signaling and target pathways critical for the growth, repair and maintenance of a number of tissue and organ systems

We believe our product candidates have the potential to unlock the full therapeutic benefits of modulating the TGF- $\beta$  superfamily and provide disease-modifying benefit to patients

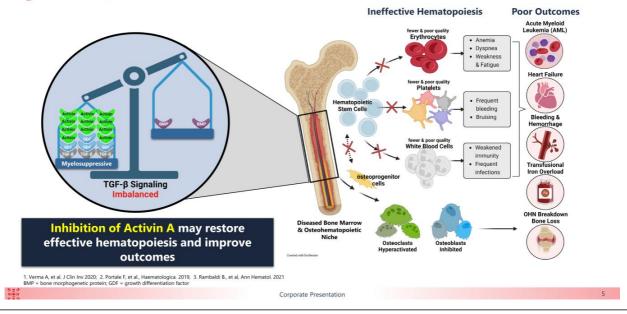




# Hematology Franchise

Corporate Presentation

# Imbalanced TGF-β Signaling in Bone Marrow Results in Ineffective Hematopoiesis and Poor Outcomes in Both MDS and MF<sup>1,2,3</sup>





# KER-050 (elritercept)

Investigational Treatment for Anemia and Thrombocytopenia in Patients with Myelodysplastic Syndromes

Ongoing Phase 2 Clinical Trial of KER-050 for the Treatment of Anemia in Patients with Very Low-, Low- or Intermediate-Risk Myelodysplastic Syndromes

Corporate Presentation

# Myelodysplastic Syndromes (MDS)



MDS is a collection of bone marrow disorders characterized by ineffective hematopoiesis and peripheral cytopenias.

## **Clinical Consequences**

The clinical consequences of MDS include anemia, bleeding, iron overload, cardiovascular disease and progression to acute myeloid leukemia (AML).

# Survival Ranges

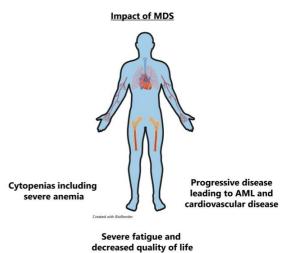
MDS

Median survival ranges from approximately nine years for very low-risk patients to less than a year for high-risk patients.



## Scope

In the United States, there are 60,000 to 170,000 patients living with MDS and 15,000 to 20,000 new cases of MDS reported each year.



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Corporate Presentation

# **Current Treatment Landscape for Treatment of Anemia in Lower-Risk MDS**

## **Red Blood Cell (RBC) Transfusions**

- RBC transfusions provide symptomatic relief of anemia
- Transfusion dependency is associated with iron overload, further exacerbating damage to the bone marrow and increasing risk of AML progression and cardiovascular disease
- Prolonged transfusion dependence is associated with shorter overall survival

### **Erythroid Stimulating Agents (ESAs)**

 ESAs are currently first line treatment of choice but response is limited in patients with endogenous erythropoietin levels (>200 U/L) and high transfusion burden (>4 units of RBC/8 weeks)

### **Erythroid Maturation Agent**

- Reblozyl<sup>®</sup> approved in 1st and 2nd line MDS
- In second-line treatment, only 20% of high transfusion burden (HTB) patients achieved 8-week transfusion independence with Reblozyl<sup>®</sup> versus 4% with placebo<sup>1</sup>
- In second-line setting, a medical reviewer of luspatercept noted "patient reported outcome (PRO) data showed no improvement in quality of life for patients who received luspatercept or who responded to luspatercept."<sup>2</sup>

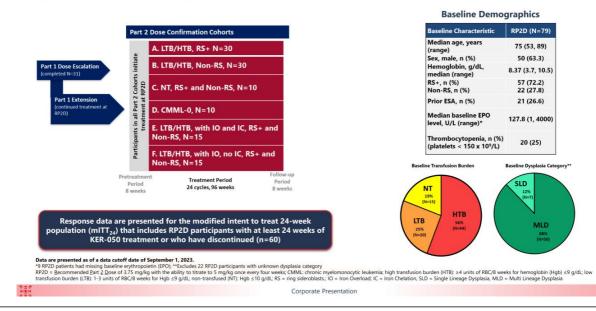
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### Unmet need remains for treatment that can address the multifaceted pathophysiology of MDS

1. Femaix P, et al. New Eng J Med 2020; 382:140-151; 2. Lspatercept FDA review document Page 11 4/3/2020

Corporate Presentation

# Ongoing Phase 2 Clinical Trial of KER-050 for the Treatment of Anemia in Patients with Very Low-, Low- or Intermediate-Risk MDS



# **KER-050 was Generally Well-tolerated**

# Most frequent TEAEs ( $\geq$ in 15% of patients) regardless of causality were:

- Dyspnea or diarrhea (18; 22.8% each)
- ► Fatigue (16; 20.3%)
- Nausea (15; 19.0%)
- Headache (12; 15.2%)

Most TEAEs were mild (Grade 1) to moderate (Grade 2) 3 treatment-related TESAEs of injection site reaction (Grade 2), dyspnea (Grade 3), and syncope (Grade 3) occurred in 1 patient each

 Dyspnea and syncope were assessed as not related to study treatment by the Sponsor due to underlying co-morbidities

Fatal TESAEs (cardiac failure and myocardial infarction) occurred in 2 (2.5%) patients; both were assessed as unrelated by the PI and Keros No patients progressed to AML

Category RP2D (N=79) n (%) Any TEAE 74 (93.7) Any treatment-related TEAE 33 (41.8) Any TESAE 28 (35.4) Any treatment-related TESAE 3 (3.8) Any TEAE leading to death 2 (2.5) Any TEAE leading to KER-050 11 (13.9) discontinuation\*

\*Treatment-related TEAEs leading to KER-050 discontinuation: injection site reaction, platelet count increased, and dyspnea

Unrelated TEAEs leading to KER-050 discontinuation: nodular melanoma, NSCLC, MI, dementia Alzheimer's type, dyspnea, cardiac failure, and COPD & cardiac failure congestive (both in 1 patient)

Treatment-related = considered to be related to the study treatment by the treating investigator. Number and percent of patients with events were summarized.

se; MI = myocardial infarction; NSCLC = non-small cell lung cancer; TEAE = treatment emergent adverse event; TESAE = treatment emergent serious adverse event

Data are presented as of a data cutoff date of September 1, 2023. AML = acute myeloid leukemia; COPD = chronic obstructive pulmona

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Corporate Presentation

# Hematologic Responses Observed in Broad Array of Patients Treated with KER-050

| Responders/N (%)                    | mITT <sub>24</sub> |              |
|-------------------------------------|--------------------|--------------|
|                                     | All (N=60)         | HTB (N=33)   |
| Overall Response <sup>a,b</sup>     | 30/60 (50)         | 15/33 (45.5) |
| Modified IWG 2006 HI-E <sup>c</sup> | 28/60 (47)         | 15/33 (45.5) |
| RS+                                 | 23/40 (58)         | 12/23 (52.2) |
| non-RS                              | 5/20 (25)          | 3/10 (30)    |
| TI ≥8 weeks <sup>d</sup>            | 18/46 (39.1)       | 11/33 (33.3) |
| RS+                                 | 15/32 (46.9)       | 8/23 (34.8)  |
| non-RS                              | 3/14 (21.4)        | 3/10 (30)    |

HI-E and transfusion independence (TI) response rates in mITT<sub>24</sub> patients with HTB were similar to those observed in the overall mITT<sub>24</sub> population, supporting the potential for KER-050 to treat a broad array of patients with MDS including those with greater transfusion burden and bone marrow dysfunction

Data are presented as of a data cutoff date of September 1, 2023. a. Includes data for weeks 0-24 in mIT<sub>24</sub> patents; b. Defined as achieving modified IWG 2006 HI-E and/ Ti; c. Modified IWG 2006 HI-E = mean increase in hemoglobin ≥ 1.5 g/dL (NT+LTB) or reduction in transfusion of ≥4 RBC units (HTB) over 8 weeks on treatment period;

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# Higher Hematologic Response Rates Observed in Patients with Baseline EPO <500 U/L

| Responders/N (%)                | mITT <sub>24</sub> EPO<500 U/Lª |              |
|---------------------------------|---------------------------------|--------------|
|                                 | All (N=50)                      | HTB (N=26)   |
| Overall Response <sup>a,b</sup> | 28/50 (56.0)                    | 14/26 (53.8) |
| Modified IWG 2006 HI-E          | 26/50 (52.0)                    | 14/26 (53.8) |
| RS+                             | 21/36 (58.3)                    | 11/20 (55)   |
| non-RS                          | 5/14 (35.7)                     | 3/6 (50)     |
| TI ≥8 weeks <sup>d</sup>        | 17/38 (44.7)                    | 10/26 (38.5) |
| RS+                             | 14/29 (48.3)                    | 7/20 (35)    |
| non-RS                          | 3/9 (33.3)                      | 3/6 (50)     |

Studies in mainly LR-MDS patients suggest that the majority (~90%) of patients have serum EPO levels < 500 U/L<sup>1</sup>
 EPO levels ≥500 U/L are associated with lower erythroid response rates across multiple treatments<sup>1</sup>

9 patients in the mITT<sub>24</sub> population had baseline EPO levels ≥ 500 U/L:
 6/9 had non-RS MDS

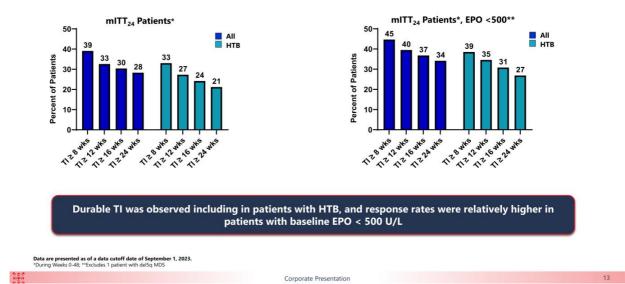
• 3/9 were reclassified by IPSS-M as having high or very-high risk disease

Data are presented as of a data cutoff data of September 1. 2023. a. Includes data for veeks -0-24 in mIT<sub>12</sub>, patients, excluding one patient with del5q MDS although their baseline EPO was <500 U/L; b. Defined as achieving modified IWG 2006 HI-E and/or T; c. Modified IWG 2006 HI-E = mean increase in hemoglobin >1.5 / g/d. (INT-11) for reduction in transfusion of 24 RBC units (HTB) over 8 weeks on treatment compared to 8-week pre-treatment period; d. Ti-evaluable patients received at least 2 RBC units in the 8-week pre-treatment period; 1. Park, S et al. Annals of Hematology. 2020.

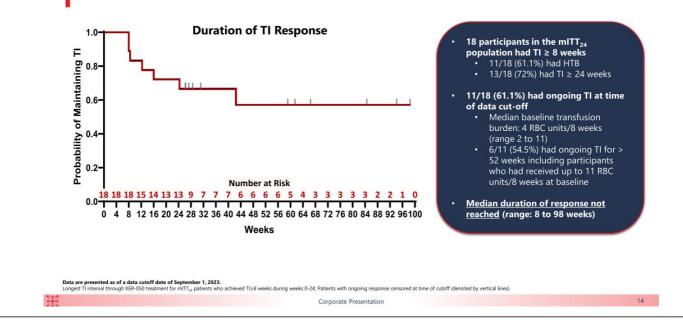
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Corporate Presentation

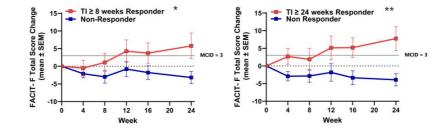
# Observed Rates of TI for ≥24 Weeks Support Durability of Response with KER-050 Treatment



# **Durable TI Responses Observed with KER-050 Treatment**



# **Durable and Clinically Meaningful Improvements in FACIT-Fatigue** Scores were Observed in TI Responders to KER-050



Health-related quality of life (HRQOL) is negatively impacted by MDS<sup>1,2</sup> with fatigue identified as a critically important domain to assess in patients with MDS<sup>3</sup>

- Prolonged transfusion dependence is associated with significantly worse HRQOL and shorter overall survival<sup>3</sup>
- ► Evidence suggests that worse fatigue is associated with reduced survival in MDS<sup>4</sup>
- The FACIT-Fatigue scale is a validated measure of self-reported fatigue and its impact upon daily activities and function that has been widely used in MDS studies<sup>4,5</sup>

Data are presented as of a data cutoff date of September 1, 2023. \*Includes data for mIT<sub>24</sub> patients with baseline FACIT-Fatigue scores (n = 1 missing) for TI ≥ 8 weeks Responder, assessed from Weeks 0 to 24; \*\* Includes data for mIT<sub>24</sub> patients with baseline FACIT-Fatigue scores (n = 1 missing) for TI ≥ 24 weeks Includes data for mIT<sub>16</sub> patients with baseline FACIT-Fatigue scores (n = 1 missing) for TI ≥ 8 weeks Responder, assessed from Weeks 0 to 24; \*\* Includes data for mIT<sub>24</sub> patients with baseline F Responder, assessed from Weeks 0 to 48; 1. Shauder, R et al., Blood. 2018; 2. Pieyer, Lia, et al., Cancers. 2023; 3. Santini V. Et al., Clin Lymphoma Myeloma Leuk. 2018; 4. Oliva EN et al., Blood. 2021; 5. Sekeres M. et al., HemaSphere. 2023; MCID = minimily clinically important difference

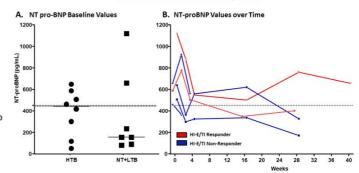
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Corporate Presentation

# Potential of KER-050 to Reduce Cardiac Stress in Exploratory Analysis

- In patients with LR-MDS, cardiovascular (CV) events represent a major cause of death possibly due to myocardial stress exacerbated by chronic anemia and iron overload in MDS<sup>1-3</sup>; NT-proBNP is a biomarker of myocardial stress
- Activin A has been shown to play a pathophysiologic role in CVD<sup>4,5</sup>, and has been associated with inflammation<sup>6</sup>, vascular and myocardial remodeling<sup>7,8</sup>, myocardial infarction<sup>9</sup> and severity of HF<sup>10</sup>
- Decreases in NT-proBNP were observed rapidly following initiation of dosing and were sustained for the majority of individuals regardless of erythropoietic response

**Observed Decreases in NT-proBNP** 

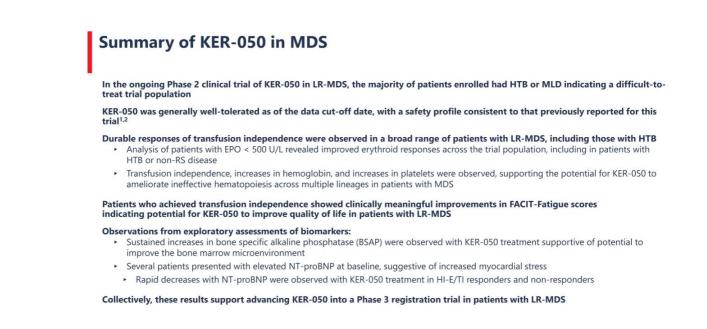


Suggests KER-050 may ameliorate cardiac strain directly via inhibition of activin A and indirectly by improving anemia and reducing transfusion burden

Data are presented as of a data cutoff date of September 1, 2023. 1. Madry et al, Br. J Haematol 2022; Z. Oliva E, et al. Am J Blood Res. 2011; 3. Gatterman N Int J Hematol 2018; 4. Yndestad A J Appl Physiol. (2009) 106:1356-64; 5. Liu H et al Arteriosclerosis, Thrombosis, and Vascular Biology. 2023;43:330-346; Phillips D. et al. Cytokine Growth Factor Reviews 2009; 2020;153-164; 7. Ryanto G, et al. Int J Mol Sci 2023; 24(4), 3332; 8. Lin JF, et al. Acta Cardiol Sin 2016; 32(4):420-427; 9.Yndestad et al Circulation. 2004;109:1379–1385; 10. Roh et al Sci Trans Med 2019; CVD=cardiovascular disease; NT-proBNP=N-terminal prohormone brain natriuretic peptide

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Corporate Presentation



Giagounidis et al. EHA 2023; 2 Chee et al. ASH 2022

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Corporate Presentation



# KER-050 (elritercept)

Investigational Treatment for Anemia and Thrombocytopenia in Patients with Myelofibrosis

-Ongoing Phase 2 Open-Label Clinical Trial to Evaluate the Safety and Efficacy of KER-050 as Monotherapy or in Combination with Ruxolitinib in Participants with Myelofibrosis

# Myelofibrosis



**MF** MF is a rare cancer of the bone marrow in which the marrow is replaced by scar tissue and is not able to produce healthy blood cells

## **Clinical Consequences**

# MF is characterized by ineffective hematopoiesis, an enlarged spleen, bone marrow fibrosis and shortened survival. Both anemia and thrombocytopenia are negative prognostic indicators

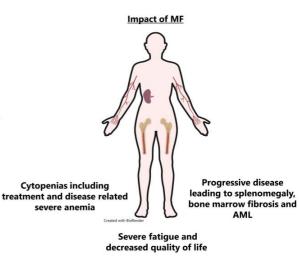


## **Current Treatments**

Currently, there are limited therapeutic options to address the MF-associated cytopenias. Patients not only often experience multiple disease-associated, but also treatment-emergent, cytopenias, including anemia and thrombocytopenia



In the United States, there are 16,000 to 18,500 patients living with MF and approximately 3,000 newly diagnosed each year

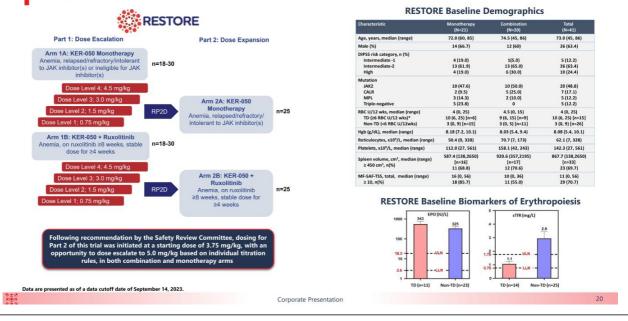


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Corporate Presentation

# Ongoing Phase 2 Clinical Trial to Evaluate KER-050 as Monotherapy or in Combination with Ruxolitinib in Patients with MF



# KER-050 Was Generally Well-Tolerated in Patients with Significant **Disease Burden**

|  | Category, n (%)                       | Monotherapy<br>(N=21) | Combination<br>(N=20) | Total<br>(N=41) |
|--|---------------------------------------|-----------------------|-----------------------|-----------------|
|  | Any TEAE                              | 20 (95.2)             | 19 (95.0)             | 39 (95.1)       |
| TEAEs mild to moderate   | Most frequent TEAEs (≥10%* of         |                       |                       |                 |
| Treatment-related TEAEs relatively infrequent                      | participants)                         |                       |                       |                 |
|  | Diarrhea                              | 3 (14.3)              | 6 (30.0)              | 9 (22.0)        |
| <ul> <li>Two had Grade 3 or higher worsening cytopenias</li> </ul> | Thrombocytopenia                      | 5 (23.8)              | 2 (10.0)              | 7 (17.1)        |
| One Dose Limiting Toxicity in Part 1                               | Asthenia                              | 5 (23.8)              | 1 (5.0)               | 6 (14.6)        |
|  | Fatigue                               | 3 (14.3)              | 3 (15.0)              | 6 (14.6)        |
| Increased Hgb ≥2 g/dL in dose Level 2 cohort of                    | Pyrexia                               | 5 (23.8)              | 1 (5.0)               | 6 (14.6)        |
| monotherapy arm  | DLTs                                  | 1 (4.8)               | 0                     | 1 (2.4)         |
| <ul> <li>No associated AE, Hgb within normal limits</li> </ul>     | SAEs                                  | 7 (33.3)              | 8 (40.0)              | 15 (36.6)       |
| Three TEAEs* leading to death, all deemed                          | KER-050-related TEAE                  | 6 (28.6)              | 4 (20.0)              | 10 (24.4)       |
| unrelated to study therapy   | Ruxolitinib-related TEAE              | N/A                   | 6 (30.0)              | 6 (14.6)        |
| uncluted to study therapy  | KER-050-related TEAE of Grade ≥ 3     | 1 (4.8)               | 0                     | 1 (2.4)         |
|  | Ruxolitinib-related TEAE of Grade ≥ 3 | N/A                   | 1 (5.0)               | 1 (2.4)         |

Data are presented as of a data cutoff date of September 14, 2023. \*Transformation to AML, cerebrovascular accident and pneumonia DLT=dose limiting toxicity

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Corporate Presentation

TEAE leading to KER-050 discontinuation

TEAE leading to ruxolitinib discontinuation

TEAE Leading to Death

21

7 (17.1)

2 (4.9)

3 (7.3)

4 (19.0)

N/A

1 (4.8)

3 (15.0)

2 (10.0)

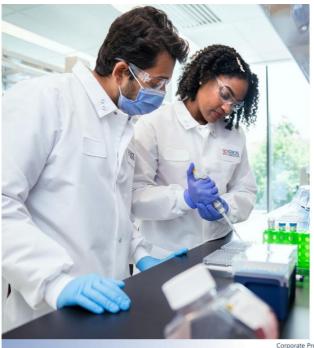
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# Preliminary Data Support Potential for KER-050 to Address Multiple Aspects of MF

| Hematopoiesis   | Spleen Size   | Symptoms  |
|---|---|---|
| Observed increases in markers of<br>erythropoiesis        | • Observed reduction in spleen size<br>in 4/7 (57%) evaluable* patients<br>(1/3 mono, 3/4 combo) at Week 24 | Observed reduction in disease<br>symptoms in 8/12 (67%) evaluable <sup>#</sup><br>patients at Week 24 |
| Mean increases in hemoglobin and                          |   |   |
| reduction in transfusion burden<br>observed over 12 weeks | • Median reduction (n=4) = -27.1%<br>(range -47.5% to -11.2%)   | • Median reduction (n=8) = -16.8%<br>(range -55.6% to -6.7%)  |
| Maintenance or improvement in<br>platelet counts observed | • Median change (n=7) = -11.2%<br>(range: -47.5% to 30%)  | • Median change (n=12) = -13.2%<br>(range -55.6% to 54.5%)  |
| *   |   |   |

Data are presented as of a data cutoff date of September 14, 2023. \*Evaluable defined as patients with baseline spiken size 2.450 cm<sup>2</sup> and a Week 24 spiken assessment \* Evaluable defined as patients with a tear 2 symptoms with an average score 2 or an average total score of ≥ 10 on the MF-SAF-TSS questionnaire at baseline and with a Week 24 MF-SAF-TSS assessment 

Corporate Presentation



# Pulmonary & Cardiovascular Franchise

orporate Presentation



# **KER-012**

## Investigational Treatment for Pulmonary Arterial Hypertension (PAH) and for Cardiovascular Disorders

Ongoing Randomized, Phase 2, Double-blind, Placebo-Controlled Clinical Trial to Evaluate the Safety and Efficacy of KER-012 in Combination with Background Therapy in Adult Participants with Pulmonary Hypertension

Corporate Presentation

# Imbalances in TGF-β Superfamily Signaling Underlies Vascular Remodeling in PAH

PAH is a debilitating disorder characterized by elevated pulmonary vascular resistance due to increased vascular smooth muscle cell proliferation and inflammation

- This results in diminished oxygenation, impaired cardiac output, and right ventricle (RV) overload
- Despite current treatment options, the 5-year survival remains only slightly above 50%
- $\blacktriangleright$  PAH is associated with imbalanced TGF- $\beta$  superfamily signaling, including insufficient bone morphogenic protein (BMP) signaling and increased signaling by activins and GDFs
  - + A third-party Phase 3 clinical trial of sotatercept<sup>1</sup> demonstrated the importance of the TGF- $\beta$  superfamily in patients with PAH
  - Maximum dose of sotatercept in PAH limited to 0.7 mg/kg in the clinical trial due to increased hemoglobin observed in earlier-phase clinical trials<sup>2,3</sup>

# Thickened Vasculature

Pulmonary

**Arterial Hypertension** 

Imbalanced TGF- $\beta$  signaling results in  $\uparrow$  myogenic & fibrogenic differentiation

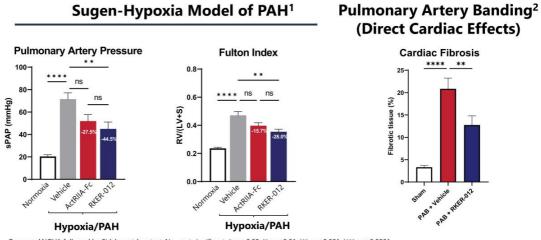
### KER-012 is a modified activin receptor IIB ligand trap:

- + Designed to rebalance TGF- $\beta$  superfamily signaling
- ${\scriptstyle \bullet}\,$  Being developed for the treatment of pulmonary and cardiovascular disorders, including PAH
- Designed to preferentially inhibit select ligands (activin A, activin B, GDF8 and GDF11) to potentially rebalance TGF-β superfamily signaling without a dose-limiting increase in RBCs

 1. Hoeper M, et al. New Eng J Med 2023; 388 (16):1478-90; 2. Sherman et al 2013 J. Clin Pharmacol 53(11) 1121–1130; 3. Humbert M et al, New Eng J Med 2023; 384:1204-15; 3. Cappellini MD et al. Haematologica 2019; 104(3) 477-484

 Corporate Presentation
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# RKER-012 Reduced Pulmonary Arterial Pressure, Right Ventricle Hypertrophy and Cardiac Fibrosis in Rodent PAH Models



One way ANOVA followed by Sidak post-hoc test. Ns – not significant, \*  $p \le 0.05$ , \*\*  $p \le 0.01$ , \*\*\*  $p \le 0.001$ , \*\*\*\*  $p \le 0.0001$ .

1. K. Babbs, et al. Am J Respir Crit Care Med 2022;205:A5776; 2. Babbs K, et al. Am Heart Association Scientific Sessions 2021; RKER-012 = Research KER-012 fused with Fc region of murine IgG1 Corporate Presentation

# **Observed KER-012 Profile Supports Therapeutic Rationale in PAH**

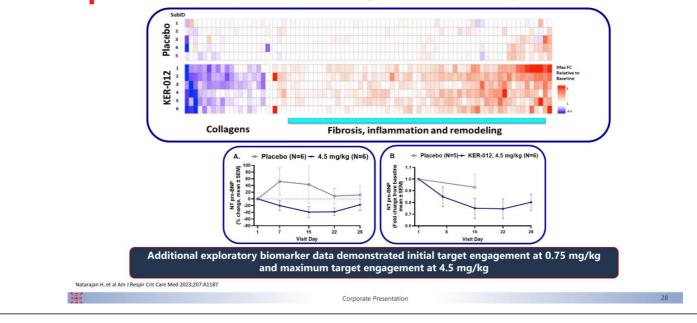
Keros completed a randomized, double-blind, placebo-controlled, two-part Phase 1 clinical trial to evaluate single and multiple ascending doses of KER-012 in healthy volunteers. • The primary objectives of this trial were safety, tolerability and pharmacokinetics.

| PAH Domain                | Preclinical Data  | Phase 1 Clinical Trial <sup>1,2</sup>  |
|---------------------------|---|--|
| MOA & Ligand Specificity: | <ul> <li>Strong activin/GDF binding observed</li> <li>Observed to be BMP-sparing vs.<br/>ActRIIA-Fc</li> </ul>  | <ul> <li>We believe PD data support potential for<br/>maximal target engagement with doses in<br/>Phase 2</li> </ul>   |
| Fibrosis & Inflammation:  | <ul> <li>↓ Inflammation</li> <li>↓ Fibrosis</li> </ul>  | <ul> <li>↓ Pro-inflammatory biomarkers</li> <li>↑ Anti-inflammatory biomarkers</li> <li>↓ Pro-fibrotic biomarkers</li> <li>↑ Anti-fibrotic biomarkers</li> </ul> |
| CV & Hemodynamics:        | <ul> <li>✓ Smooth muscle hypertrophy</li> <li>✓ Pulmonary arterial pressure</li> <li>✓ Right &amp; left ventricular hypertrophy</li> <li>✓ Cardiac fibrosis (direct)</li> <li>✓ Ventricular dysfunction biomarkers</li> </ul> | ullet Ventricular dysfunction biomarkers<br>ullet Remodeling biomarkers  |
| Erythropoiesis (Hb/RBCs): | No increase observed  | No clinically meaningful changes observed  |
| Safety & Tolerability:    | N/A   | <ul> <li>Generally well tolerated up to 4.5 mg/kg<br/>(multiple doses) in Part 2 of the trial</li> <li>AEs generally mild</li> </ul>                             |

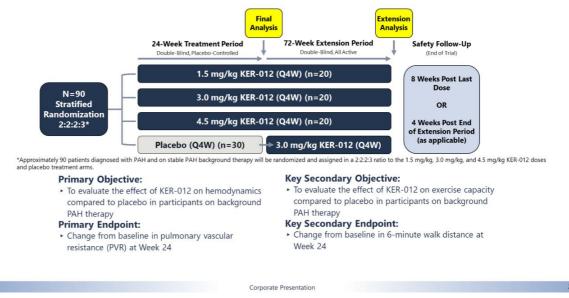
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# KER-012 Altered Expression of Serum Proteins Associated with Inflammation and Extracellular Matrix Remodeling and Lowered NT-proBNP levels



# TROPOS Trial: Global Phase 2 Clinical Trial of KER-012 in Patients with PAH



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# **Open-Label Biomarker Phase 2 Clinical Trial of KER-012**

Ongoing open-label, exploratory Phase 2 clinical trial evaluating KER-012 in adult patients with chronic heart failure with preserved ejection fraction (HFpEF) or with reduced ejection fraction (HFrEF)

The primary objective of this trial is to evaluate the tolerability and safety of KER-012 administered as multiple subcutaneous doses once every four weeks in patients with chronic heart failure

• In addition, this trial will explore pharmacokinetics, pharmacodynamic effects and NT-proBNP

### **Trial Design:**

- ► Six patients with HFpEF will be dosed with 4.5 mg/kg of KER-012 once every four weeks for up to 24 weeks
- Once all six patients have completed Study Day 29, the preliminary safety data will be reviewed by the Safety Review Committee
- Based on the outcome of this review, six patients with HFrEF are expected to be enrolled, and these patients will also receive 4.5 mg/kg of KER-012 once every four weeks for up to 24 weeks
- · After the last dose of KER-012, patients will enter into a safety follow-up period for eight weeks

### Keros expects to announce initial data from this trial in the second half of 2024

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# **Obesity &** Neuromuscular Franchise

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# KER-065, a Novel Activin Receptor Ligand Trap for the Treatment of Obesity and Neuromuscular Disorders

Keros' preclinical library of activin receptor ligand traps contains more than 40 distinct molecules containing sequences from ActRIIA and ActRIIB

 KER-065 is the 3rd molecule selected from our preclinical library for clinical development

# KER-065 is a modified activin receptor IIA (ActRIIA) and activin receptor IIB (ActRIIB) ligand trap

~50% amino acids derived from each activin receptor

### KER-065 is designed to bind to the negative regulators of muscle growth, activin A and myostatin, to increase skeletal muscle without an increase in red blood cells

 Reduced binding to bone morphogenic proteins to avoid the vascular/bleeding observed with ActRIIb-Fc derived from the native sequence



| Domain                       | Potential Effect <sup>1</sup>  |  |
|------------------------------|--|--|
| Muscle                       | Increase in skeletal muscle<br>Does not increase smooth muscle and<br>cardiac muscle |  |
| Fat                          | Decreases fat mass   |  |
| Bone                         | Increases bone mineral density   |  |
| Fibrosis and<br>Inflammation | Reduce fibrosis and inflammation via<br>Activin A inhibition                         |  |
| Cardiac                      | Improve cardiac function via Activin A<br>inhibition                                 |  |

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1. Observed in preclinical studies.

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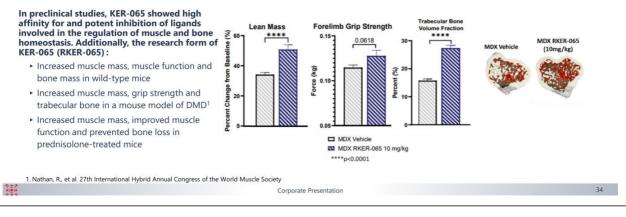
# KER-065: Neuromuscular Diseases

Muscle loss can occur as a consequence of many factors, including neuromuscular disease, disuse, aging and as a side effect of some therapies

In neuromuscular diseases, muscle loss can result in muscle weakness and, with increased severity, can lead to loss of ambulation, reliance on a wheelchair, swallowing difficulties, respiratory muscle weakness and death

 Decline in muscle mass can also be associated with secondary osteoporosis and metabolic consequences, including obesity and insulin resistance

TGF-ß pathway signaling regulates skeletal muscle, fat and bone, and activins and myostatin are powerful negative regulators of skeletal muscle



# Treatment with RKER-065 Led to Higher Utrophin Levels in Mouse Model of DMD

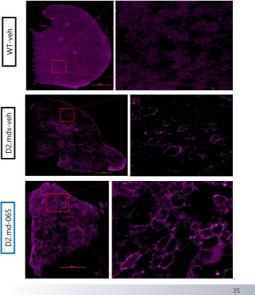
Muscle lacking dystrophin is easily damaged during the process of contraction

# Many approaches have been utilized to stabilize the muscle and provide resistance to contractile-induced damage

- Antisense oligonucleotides to trigger exon skipping, restore the mRNA reading frame, and allow production of a truncated dystrophin protein
- Gene therapy with mini and micro dystrophin
- Increase expression of utrophin (a functional analog of dystrophin)

#### Treatment with RKER-065 in a mouse model of DMD led to:

 Increased expression of utrophin in muscle fibers, potentially contributing to the observed increased strength<sup>1</sup>



1. Nathan, R., et al. 28th International Annual Congress of the World Muscle Society

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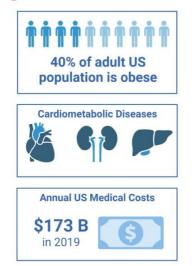


# KER-065: Obesity

- We believe preclinical data suggests KER-065 has the potential to improve body composition by increasing muscle mass and decreasing fat mass alone or in combination with glucagon-like peptide-1 (GLP-1) receptor agonists
- By targeting activin A, KER-065 has the potential to directly reduce inflammation and fibrosis, the processes resulting in the development of cardiometabolic diseases
- Potential for infrequent (monthly) subcutaneous dosing

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# **Obesity is a Growing Public Health Crisis**



Obesity is a global public health crisis, with over 1.9 billion overweight adults worldwide in 2016, 650 million of which were considered to be obese

Obesity increases risk of hypertension, dyslipidemia, type 2 diabetes, certain cancers and cardiometabolic diseases

According to the Centers for Disease Control and Prevention, the estimated annual medical cost of obesity in the U.S. was nearly \$173.0 billion in 2019 dollars

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## **Current GLP-1 RA Treatment Landscape for Obesity**

### GLP-1 receptor agonists (GLP-1 RAs) have recently been approved for the treatment of obesity

 Treatment with GLP-1 RAs led to 15%-21% mean weight loss<sup>1,2</sup>, reductions in blood lipids, improvements in glycemic control and better cardiac outcomes<sup>3</sup>

#### Weight loss is due to reduction in fat mass and reduction in lean body mass as a result of treatment

 An estimated 25%-40% of total body weight loss mediated by GLP-1 RA treatment may be attributed to loss of lean muscle mass<sup>1,2</sup>

#### Majority of body weight loss is regained after stopping GLP-1 RA treatment

 In extension analyses of 327 participants, participants regained 67% of prior weight loss one year after withdrawal of once-weekly subcutaneous GLP-1 RA treatment and lifestyle intervention<sup>4</sup>

#### Need for treatment options that:

- Ameliorate the loss of lean mass due to GLP-1 RA treatment and obesity
- Provide long-term treatment option for maintenance of weight loss
- Directly impact disease processes that contribute to cardiometabolic diseases

1. N Engl J Med 2021;384:989-1002; 2. N Engl J Med 2022;387:205-16; 3. N Engl J Med 2023; 389:2221-2232; 4. Diabetes Obes Metab. 2022; 8:1553–1564 Corporate Presentation

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## Well-Established Rationale for Targeting Activin and Myostatin Signaling as Treatment for Obesity and Associated Cardiometabolic Disease

#### **Muscle Tissue**

· Inhibition of activin A and myostatin increase muscle hypertrophy and strength

#### Adipose (Fat) Tissue

- Activin A, activin B, activin E and GDF3 signal via ActRII<sup>1</sup> and inhibit differentiation of cells to energyconsuming "brown" fat cells
- Inhibition of these ligands increases energy expenditure by adipocytes<sup>2</sup>

## **Cardiac Disease**

Activin A and follistatin-like 3 are increased in patients with heart failure<sup>3</sup>

# Clinical proof-of-concept established in third-party clinical trials, with multiple approaches targeting the TGF-β superfamily pathway

- · Selective neutralizing antibodies to myostatin and activin A
- Neutralizing antibodies targeting ActRIIA and ActRIIB
- · ActRIIB-Fc ligand trap that binds multiple ligands, including activin A and myostatin

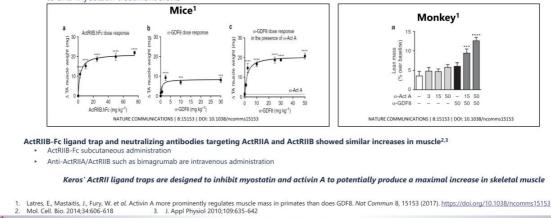
1. Endocrinology. 2012;153:3133-46; 2. Mol. Cell. Biol. 2012;32:2871-2879; 3. Sci. Transl. Med. 2019; 11:eaau8680

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## Inhibition of Both Activin A and Myostatin is Required to Maximally Increase Skeletal Muscle in Mice and Monkeys

In third-party preclinical studies, selective inhibition of myostatin (GDF-8) or activin A resulted in small increases in muscle mass in rodents and non-human primates<sup>1</sup>

- Targeting multiple ligands in the TGF-β superfamily produced the largest increase in skeletal muscle<sup>1</sup>
- More than two times increase in skeletal muscle with anti-myostatin and anti-activin A combination or ActRIB-Fc treatment compared to anti-myostatin treatment alone<sup>1</sup>

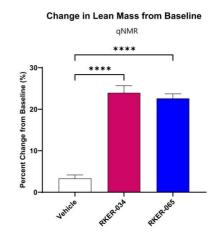


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# Equivalent Increase in Lean Mass Observed in Obese Mice with RKER-034 and RKER-065

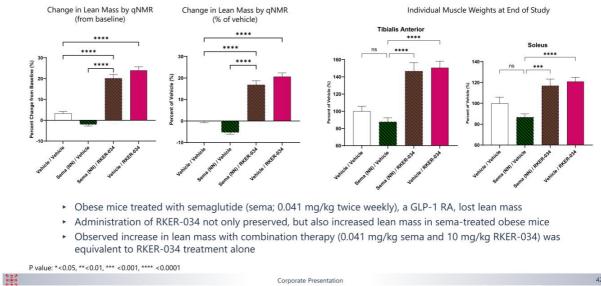
- RKER-034, a preclinical asset from our proprietary library of ActRII ligand traps, is closely related to KER-065. Similar to KER-065, RKER-034 is designed to bind to and inhibit multiple TGF-ß ligands, including activin A and myostatin (GDF8), and has increased skeletal mass and bone in preclinical studies
- Mice fed sugar- or fat-enriched diets for a long time end up with metabolic diseases like humans: obesity, high blood sugar, high blood pressure, insulin resistance, heart failure and liver disease<sup>1</sup>
- Administration of either RKER-034 or RKER-065 (10 mg/kg, twice weekly for four weeks) in obese mice on a high calorie diet resulted in equivalent increases in lean mass



P value: \*<0.05, \*\*<0.01, \*\*\* <0.001, \*\*\*\* <0.0001

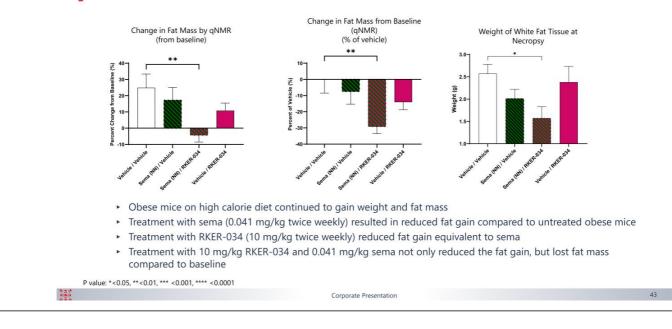
1. Nutr. Metab. (Lond). 13:65 Corporate Presentation 41

## **RKER-034 Preserved Lean Mass in Obese Mice Treated with** Semaglutide

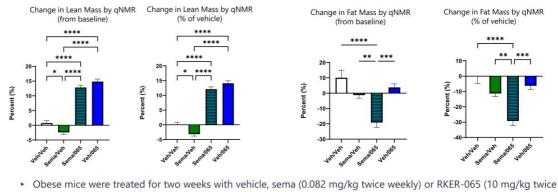


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# **Treatment Enhanced Fat Loss with Semaglutide**



# **RKER-065 Preserved Lean Mass and Enhanced Fat Loss in Obese Mice Treated with Semaglutide**



- Obese mice were treated for two weeks with vehicle, sema (0.082 mg/kg twice weekly) or RKER-065 (10 mg/kg twice weekly) in combination with sema or monotherapy
- Treatment with sema reduced fat mass and resulted in loss of lean mass compared to untreated obese mice
- Administration with RKER-065 increased lean mass and reduced fat mass compared to untreated obese mice
- Combination treatment with semaglutide and RKER-065 increased lean mass compared to untreated obese mice and had a synergistic loss in fat mass

| P value: *<0.05, **<0.01, *** <0.001, **** <0.0001 |                        |    |
|--|------------------------|----|
| 500<br>8101<br>827                                 | Corporate Presentation | 44 |
|  |                        |    |

# Summary of Preclinical Studies in the Diet Induced Mouse Model of Obesity

Treatment with RKER-065 and RKER-034 showed similar increases in skeletal muscle

As a single treatment, both RKER-065 and RKER-034 increased lean (muscle) mass and reduced fat mass

Combination treatment with RKER-034 and sema led to:

- Reversal of lean mass mediated by sema
- · Enhanced loss of fat mass through increased energy expenditure from increased lean mass

Based on this preclinical data, we believe that KER-065 has the potential to treat obesity as a standalone therapy and in combination with GLP-1 RAs, by increasing muscle mass and decreasing fat mass

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# **KER-065 Phase 1 Clinical Trial in Healthy Volunteers**

Primary objectives of this Phase 1 clinical trial are to evaluate safety, tolerability and pharmacokinetics of single and multiple ascending doses of KER-065

The multiple ascending dose portion of this trial will enroll patients with elevated body mass index (BMI) of 27-33 to evaluate KER-065's effect on lean mass, fat mass and bone mineral density

Imaging by DXA and MRI

Additional exploratory biomarkers will be included to examine KER-065's pharmacologic effect on:

- Biomarkers of bone formation and resorption
- Adipokines
- NT-proBNP, a marker of cardiac stress
- Markers of fibrosis

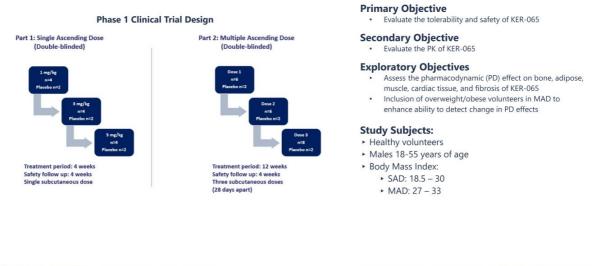
## We believe this trial has the potential to provide biologic proof-of-concept to support initiation of a Phase 2 proof-of-concept clinical trial in patients with obesity

- Informs potential development in neuromuscular indications such as Duchenne muscular dystrophy (DMD)
  - Patients on the DMD standard of care, glucocorticoids, have higher BMI, muscle loss, insulin resistance and accelerated bone loss
- We expect to announce data from this Phase 1 clinical trial in Q1 2025

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# Proprietary Discovery Approach

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# **Proprietary Discovery Approach**

We have developed a proprietary library of ActRII ligand traps by combining sequences from ActRIIA and ActRIIB

- We have engineered molecules that are designed to have the therapeutic properties of either or both parent molecules
- Our ActRII program has produced a broader pipeline of engineered ligand traps and currently contains more than 20 unique variants in preclinical development
- KER-065 was nominated out of this proprietary library of ActRII ligand traps for clinical development
- KER-034 is another ActRII ligand trap in our preclinical pipeline closely related to KER-065

This discovery approach has the potential to identify additional molecules with differentiated profiles from existing third-party products and product candidates

· Pipeline of preclinical assets: musculoskeletal; obesity; other undisclosed indications

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# Anticipated Key Milestones

## KER-050

| Engage with regula   | ators on design of Phase 3 MDS trial  | H1 2024      |
|--|---|--------------|
| <ul> <li>Announce additior</li> </ul>  | nal data from Part 2 of Phase 2 MDS trial   | Q2 & Q4 2024 |
| <ul> <li>Announce additior</li> </ul>  | nal data from Phase 2 MF trial  | Q2 & Q4 2024 |
| KER-012  |   |              |
| <ul> <li>Provide update on</li> </ul>  | enrollment of Phase 2 PAH TROPOS trial  | H1 2024      |
| Announce initial data  | ata from Phase 2 open-label biomarker trial in patients with chronic  | H2 2024      |
| heart failure with p   | preserved ejection fraction and in such patients with reduced ejection fraction   |              |
| KER-065  |   |              |
| <ul> <li>Announce data fro</li> </ul>  | om Phase 1 healthy volunteer trial  | Q1 2025      |
| <ul> <li>KER-012</li> <li>Provide update on</li> <li>Announce initial date of the second seco</li></ul> | <ul> <li>Provide update on enrollment of Phase 2 PAH TROPOS trial</li> <li>Announce initial data from Phase 2 open-label biomarker trial in patients with chronic heart failure with preserved ejection fraction and in such patients with reduced ejection fraction</li> </ul> |              |

\*\*\*\* \*1010 Corporate Presentation