ENLIVEX THERAPEUTICS
PHASE IIA TOPLINE RESULTS

Aug 2025

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FORWARD-LOOKING STATEMENTS

These slides and the accompanying oral presentation contain forward- looking statements and information. Forward-looking statements are subject to known and unknown risks, uncertainties, and other factors that may cause our or our industry's actual results, levels or activity, performance or achievements to be materially different from those anticipated by such statements. The use of words such as "may", "might", "will", "should", "could", "expect", "plan", "anticipate", "believe", "estimate", "project", "intend", "future", "potential" or "continue", and other similar expressions are intended to identify forward looking statements. For example, all statements we make regarding (i) the initiation, timing, cost, progress and results of our preclinical and clinical studies and our research and development programs, (ii) our ability to advance product candidates into, and successfully complete, clinical studies, (iii) the timing or likelihood of regulatory filings and approvals, (iv) our ability to develop, manufacture and commercialize our product candidates and to improve the manufacturing process, (v) the rate and degree of market acceptance of our product candidates, (vi) the size and growth potential of the markets for our product candidates and our ability to serve those markets, and (vii) our expectations regarding our ability to obtain and maintain intellectual property protection for our product candidates, are forward looking. All forward-looking statements are based on current estimates, assumptions and expectations by our management that, although we believe to be reasonable, are inherently uncertain. All forward-looking statements are subject to risks and uncertainties that may cause actual results to differ materially from those that we expected. Material factors and risks that may cause actual results to differ materially from those expressed in forward-looking statements are detailed under "risk factors" and similar headings in our filings with the Securities and Exchange Commission, including in the Company's most recent annual report on Form 20-F filed with the Securities and Exchange Commission. Any forward-looking statement speaks only as of the date on which it was made. We undertake no obligation to publicly update or revise any forward-looking statement, whether as a result of new information, future events or otherwise, except as required by law. This presentation is not, and nothing in it should be construed as, an offer, invitation or recommendation in respect of our securities, or an offer, invitation or recommendation to sell, or a solicitation of an offer to buy, any of our securities in any jurisdiction. Neither this presentation nor anything in it shall form the basis of any contract or commitment.

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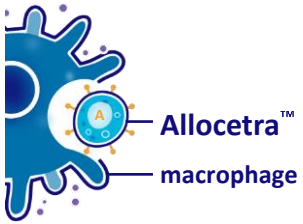
MACROPHAGE MODULATION FOR THE TREATMENT OF INFLAMMATORY DISEASES

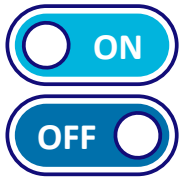
Enlivex is a clinical stage pharmaceutical company developing Allocetra™, a universal, off-the-shelf cell therapy designed to reprogram macrophages into their homeostatic state, for treatment of inflammatory diseases.

About:



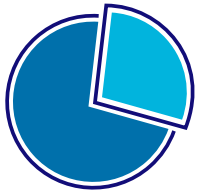
Novel therapeutic modality:

macrophage modulation.



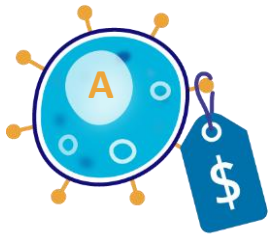
Novel approach:

allogeneic cells to trigger macrophage reprogramming.



Substantial market:

unmet need in inflammatory and autoimmune diseases.



Cost-effective cell therapy:

simple manufacturing process yielding a ready-to-use off-the-shelf cell therapy.

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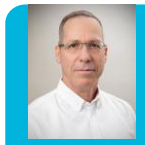
DRIVING INNOVATION WITH BALANCED SCIENTIFIC AND BUSINESS EXPERTISE

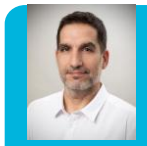


Shai Novik
Executive Chairman

ngenla · PROLOR BIOTECH

26 years of experience

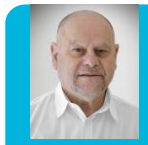
$590M company exit



Oren Hershkovitz
CEO

ngenla · OPKO

17 years of experience



Dror Mevorach
Scientific Founder

20 years of experience

140+ publications

Shachar Shlosberger
CFO

PROLOR BIOTECH

15 years of experience

Einat Galamidi
CMO

gamida cell

20 years of experience

Veronique Amor-Baroukh
VP Operations

WEIZMANN INSTITUTE OF SCIENCE

10 years of experience

Iris Tavor
VP RA/QA

Pluristem Therapeutics Inc.

20 years of experience

Chen Ankri
Sr. Director of pre-clinical & clinical pharma

10 years of experience

Sigal Arad
Sr. Director of Human Resources

15 years of experience

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BOARD OF DIRECTORS

Shai Novik
Executive Chairman

Founder and President of PROLOR Biotech, Sold in 2013 ($590mm transaction). Lead product, Ngenla, partnered to Pfizer, $295 million down payment, $275 upon FDA & other regulatory approvals. Ngenla by Pfizer has obtained marketing approvals in 43 countries, including Japan, EU and U.S.

Roger Pomerantz
Vice Chairman

Former Worldwide Head of Licensing and Acquisition and Knowledge Management at Merck & Co., where he led the completion of more than 150 business development transactions. Former Global Head of Infectious Diseases for Johnson & Johnson Pharmaceuticals. Former Venture Partner at Flagship Pioneering, as well as the former President, CEO, and Chairman of the Board of Seres Therapeutics.

Gili Hart, Ph.D
Director

Formerly with PROLOR Biotech, led the pre-clinical, clinical, and pharmacological activities. CEO of SpliSense, a clinical stage company focused on transformative RNA-based treatments for pulmonary diseases. SpliSense pioneering platform harnesses Antisense Oligonucleotides (ASOs) for the treatment of pulmonary diseases.

Abraham Havron, Ph.D.
Director

Former CEO of PROLOR Biotech. Founding team and Director of R&D of Interpharm (Merck Serono), where he led the development of REBIF, a multi-billion multiple sclerosis drug. Formerly, VP CMC of BioTechnology General Ltd., and VP of Clal Biotechnology Industries Ltd.

Andrew Singer
Director

Former EVP and CFO of Epizyme and Senior Biotech Investment Banker at Credit Suisse, Wells Fargo Securities and RBC Capital Markets. Led financing, partnering and M&A biopharmaceutical transactions in excess of $13B.

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ENX-CL-05-001 KNEE-OSTEOARTHRITIS PHASE IIa RESULTS 3-MONTH TOPLINE DATA ANALYSIS

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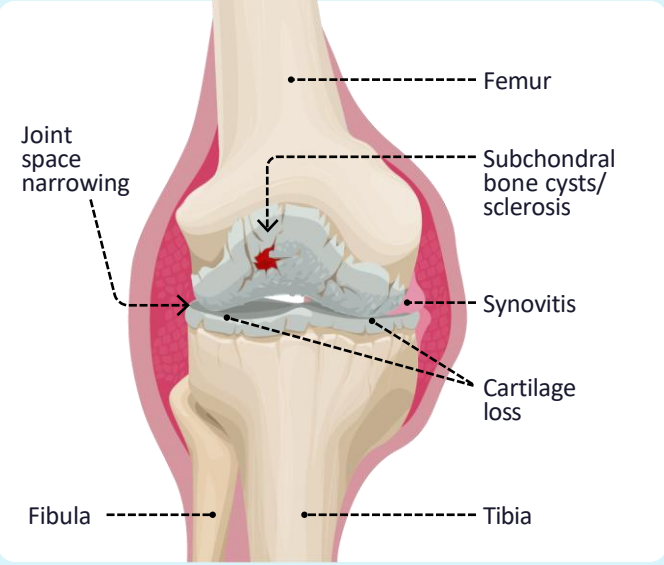
OSTEOARTHRITIS: A GROWING MARKET WITH SIGNIFICANT POTENTIAL AND UNMET MEDICAL NEED

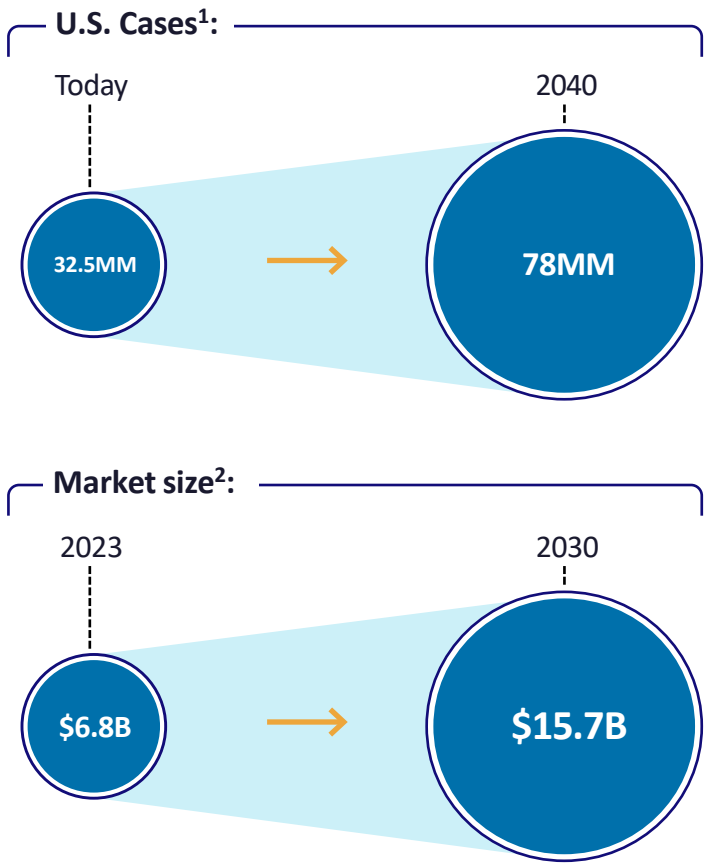
Disease overview



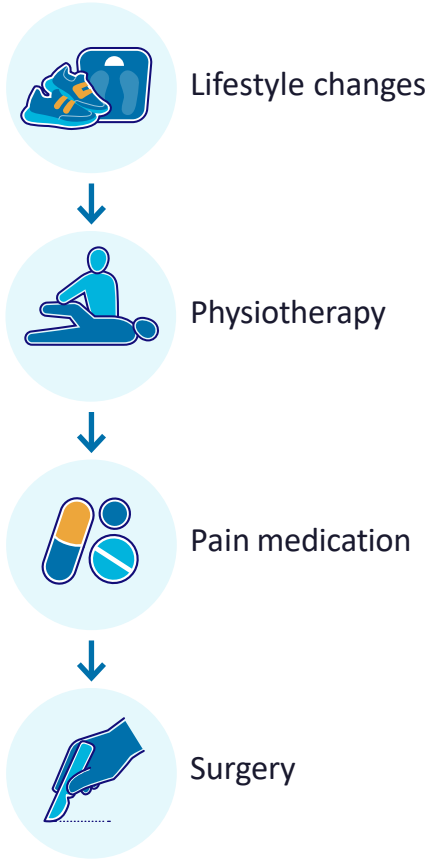
Disease manifestation:

cartilage damage, abnormal bone remodeling, and inflammation of the synovium.

Market



Standard of care



1 - Arthritis Foundation (https://www.arthritis.org/)
2 - Verified Market Research reports

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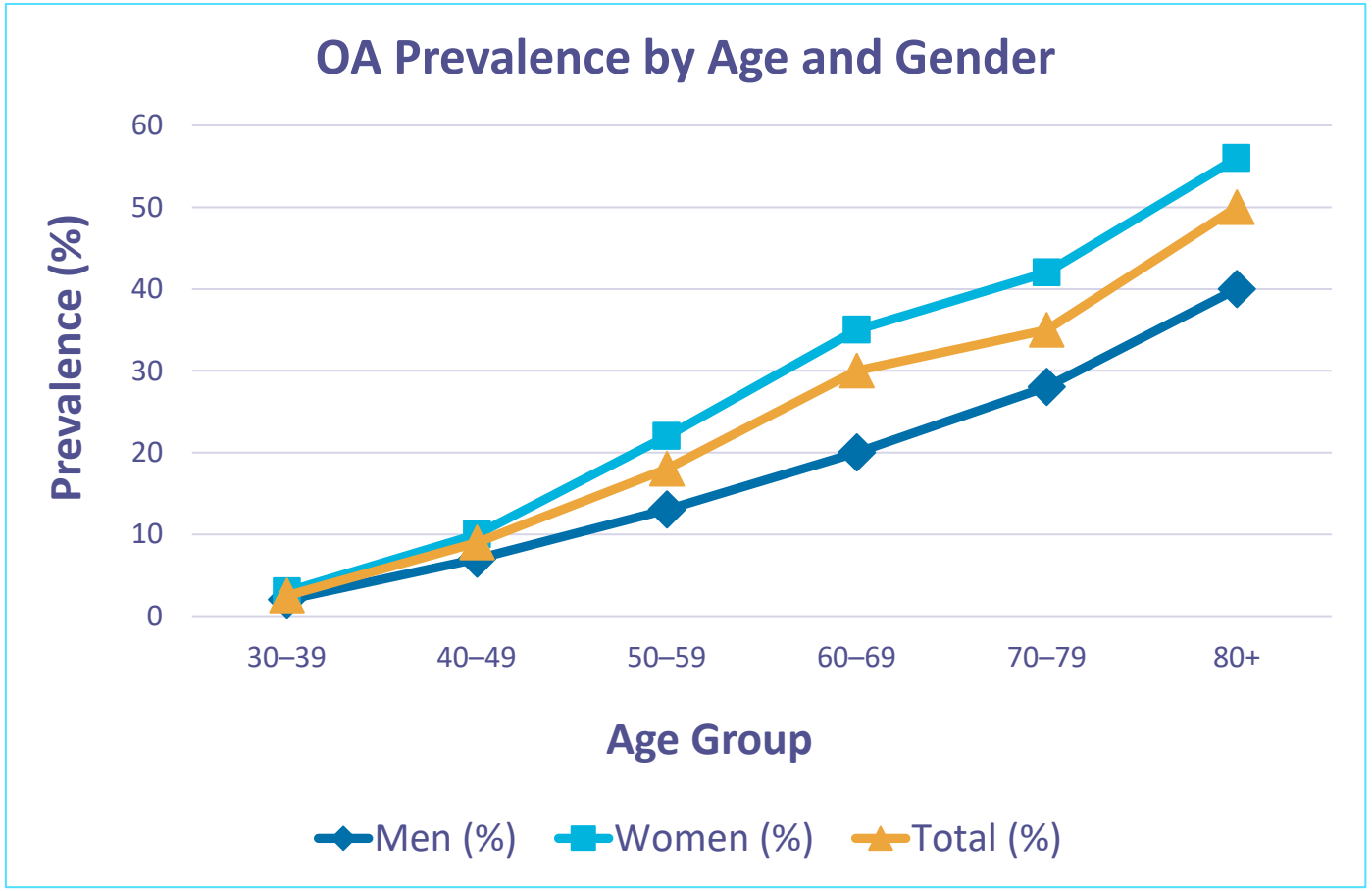
PREVALENCE OF OSTEOARTHRITIS INCREASES WITH AGE[1]



[1] Global, regional prevalence, incidence and risk factors of knee osteoarthritis in population-based studies, A. Cui et al. / EClinicalMedicine 2930 (2020) 100587

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ENX-CL-05-001 PHASE I/IIa

MULTI-COUNTRY, MULTI-CENTER, RANDOMIZED, DOUBLE-BLIND, CONTROLLED TRIAL EVALUATING ALLOCETRA™ IN PATIENTS WITH MODERATE TO SEVERE KNEE OSTEOARTHRITIS

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ENX-CL-05-001 – PHASE IIa STUDY DESIGNED A PRIORI TO IDENTIFY CORRELATION OF TREATMENT EFFECT AND BASELINE FACTORS

OA leading experts forewarned us prior to study design

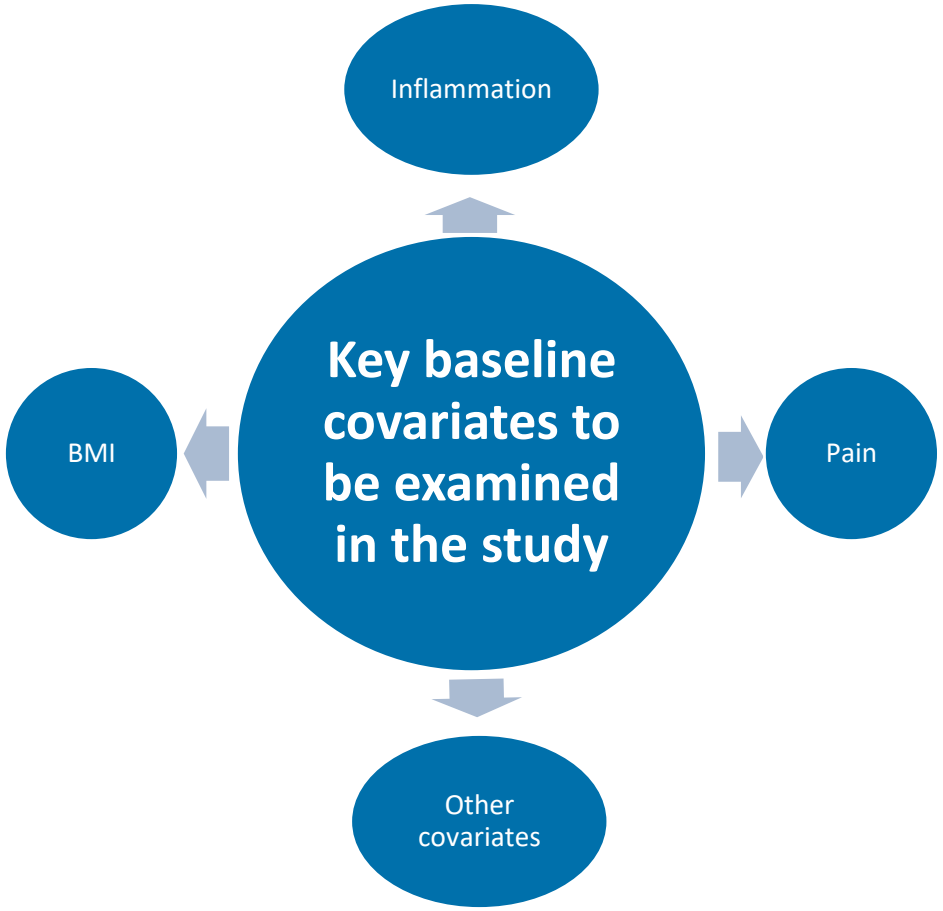
"OA is a clinical syndrome and not a singular molecular disease"

Heterogeneous patient population included indiscriminately

Purpose was to assess safety, efficacy, and potentially find a strong signal in a responder sub-population to guide future development

(As stated in our 2024 annual report/PR)

Phase IIa is the proper clinical stage to find the responder sub-population



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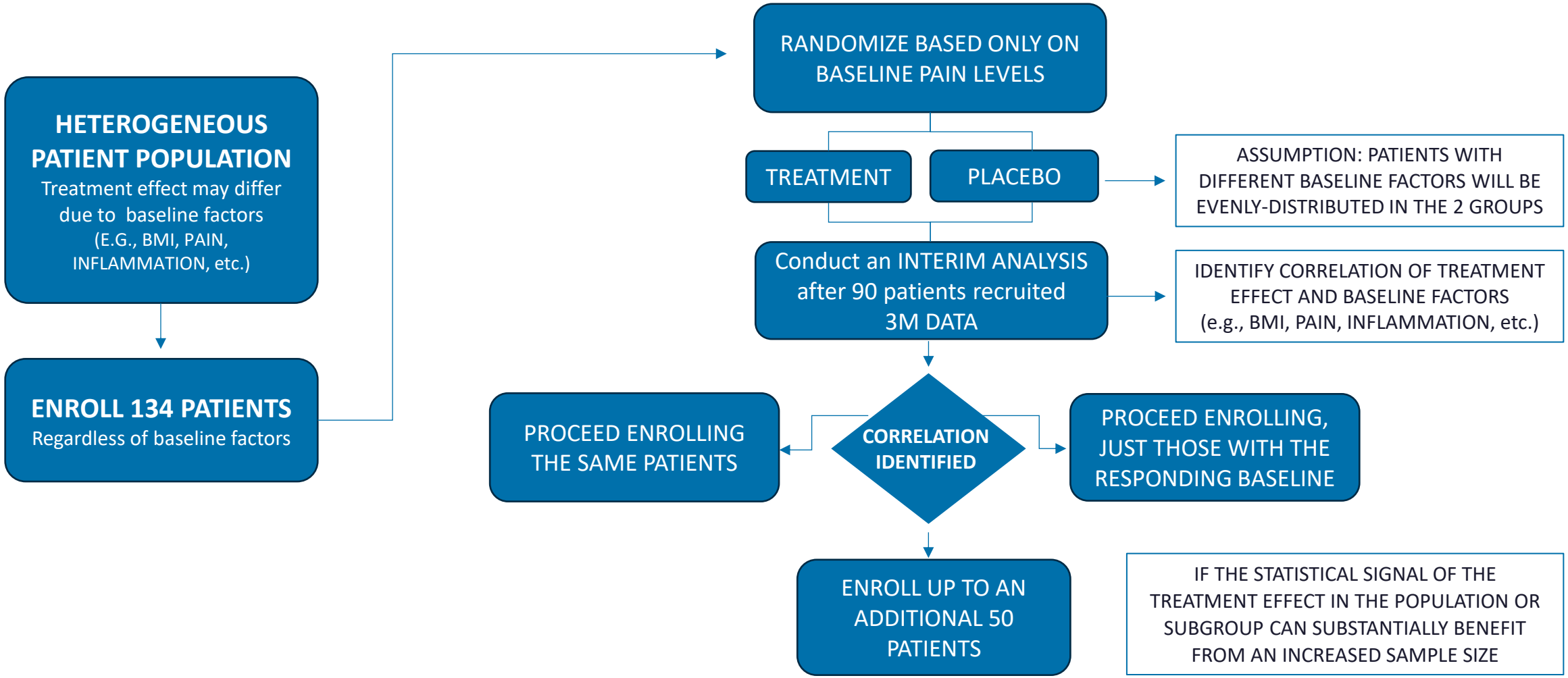
ENX-CL-05-001 – INDEPENDENT, OUTSOURCED INTERIM ANALYSIS AFTER 90 PATIENTS TO IDENTIFY THE RESPONDER SUB-POPULATION



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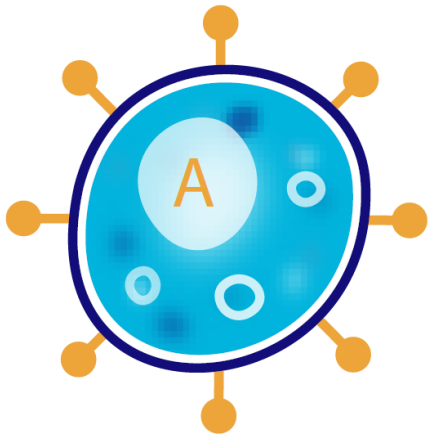
ENX-CL-05-001 – PHASE IIa OBJECTIVES MET: (A) FAVORABLE SAFETY PROFILE & POSITIVE EFFECT, (B) HIGH RESPONDERS WERE IDENTIFIED (REPRESENTING 50% OF THE KOA MARKET)

- We had clear success in isolating the key molecular disease for which our drug works well
- This finding directly illustrates that our hypotheses were correct – due to the heterogeneity of the patient population, a distinct responder group needs to be identified



Specific responder profile

- More than 50% of the patients in the study
- Representing more than 50% of the KOA market
- Aligned with the proposed mechanism of action of Allocetra™

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ENX-CL-05-001: PHASE I/IIa 2-STAGE TRIAL DESIGN

Randomized, double-blind, placebo-controlled, multi-country study

Patient criteria:

Patients with symptomatic moderate to severe knee OA who have failed to respond to conventional OA therapy;

Age 45-80 years;

Kellgren-Lawrence (K-L) Grade 2 or 3.

Phase I: Dose escalation & safety — 15 patients

↓ Independent safety committee → no negative safety signal, highest dose selected for Phase IIa

Phase IIa: Randomized, double-blind, placebo-controlled — 134 patients

- 3 injections (in total) of Allocetra™ or Placebo, each injection 2 weeks from the previous injection

Endpoints:

Primary:
Safety and tolerability.

Secondary:
Change in pain and function assessments (NRS, WOMAC)

Timepoints:
Efficacy: 3-month, 6-month
Safety: 12-month follow-up

Efficacy objectives

- Reduction in pain, increase in function and reduction in stiffness
- Numerical grading based on the patients' assessment using a questionnaire
- The validated questionnaire is named WOMAC
- Aligned with FDA's accepted Phase III endpoints and timepoints

ClinicalTrials.gov Registration: NCT06233474

NRS=numerical rating scale. WOMAC= Standard knee questionnaire evaluating pain, stiffness & physical function

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WELL-BALANCED BASELINE DEMOGRAPHICS & CHARACTERISTICS

ALL RANDOMIZED & TREATED	Allocetra (N=67)	Placebo (N=67)
Age (years)		
Mean (SD)	60.72 (8.31)	61.54 (8.26)
Median (Q1, Q3)	60.00 (54.00, 66.50)	61.00 (55.50, 67.00)
Min - Max	46.00 - 80.00	46.00 - 80.00
Sex		
Female	36 (53.7%)	37 (55.2%)
Male	31 (46.3%)	30 (44.8%)
BMI at baseline		
Mean (SD)	28.79 (3.89)	29.93 (4.29)
Median (Q1, Q3)	28.60 (26.40, 30.65)	29.80 (26.60, 32.30)
Min – Max	19.40 - 39.30	22.20 - 39.70
Target knee		
Left	29 (43.3%)	30 (44.8%)
Right	38 (56.7%)	37 (55.2%)
Kellgren-Lawrence grade (target knee)		
Grade 2	23 (34.3%)	28 (41.8%)
Grade 3	44 (65.7%)	39 (58.2%)
Country		
Denmark	47 (70.1%)	46 (68.7%)
Israel	10 (14.9%)	7 (10.4%)
Moldova	10 (14.9%)	14 (20.9%)

	Allocetra (N=67)	Placebo (N=67)
WOMAC pain score at baseline		
Mean (SD)	26.67 (7.20)	26.42 (9.40)
Median (Q1, Q3)	26.00 (22.00, 32.50)	27.00 (23.00, 32.00)
Min - Max	9.00 - 40.00	2.00 - 43.00
Pain medication tablets during baseline		
Mean (SD)	1.85 (4.27)	3.28 (9.01)
Median (Q1, Q3)	0.00 (0.00, 2.00)	0.00 (0.00, 2.00)
Min - Max	0.00 - 20.00	0.00 - 42.00
Baseline NRS pain (target knee)		
Mean (SD)	6.19 (0.94)	6.16 (0.95)
Median (Q1, Q3)	6.20 (5.43, 6.77)	6.00 (5.43, 6.86)
Min - Max	4.57 - 8.14	4.71 - 8.43
Baseline NRS pain (contralateral knee)		
Mean (SD)	2.37 (1.41)	2.44 (1.42)
Median (Q1, Q3)	2.50 (1.43, 3.38)	2.43 (1.50, 3.62)
Min - Max	0.00 - 5.00	0.00 - 4.71

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PRIMARY VS SECONDARY OA: DIFFERENCE IN MEDIATION OF INFLAMMATION

- **Primary OA**
  - As individuals age, the cumulative effects of wear and tear on joint tissues become increasingly evident and induce low grade inflammation mainly mediated by resident macrophages and fibroblasts, and the regenerative capacity of cartilage diminishes
  - This is primarily due to the age-related decline in the quality and quantity of chondrocytes, the cells responsible for maintaining cartilage integrity
  - We defined patients in the age group of >= 60 as Primary OA patients

- **Secondary OA**
  - Joint trauma with incomplete repair or other conditions such as chronic misalignment of the joint, characterize younger patients, with average onset in the 30s–40s and symptoms by 40s–50s. Secondary OA presents additional mechanisms that include chronic immune response in the joint that is different from the classical low-grade inflammation seen in primary OA, driven by accumulation of circulating monocytes, T cells, neutrophils, and complement activation
  - We defined patients in the age group of < 60 as Secondary OA patients

- Muthu S, et al. Failure of cartilage regeneration: emerging hypotheses and related therapeutic strategies. Nat Rev Rheumatol. 2023;19(7):403–416.
- Matthew J. Wood. Macrophage proliferation distinguishes 2 subgroups of knee osteoarthritis patients. Osteoarthritis and Cartilage 27 (2019)
- K. McCulloch. Accelerated post traumatic osteoarthritis in a dual injury murine model

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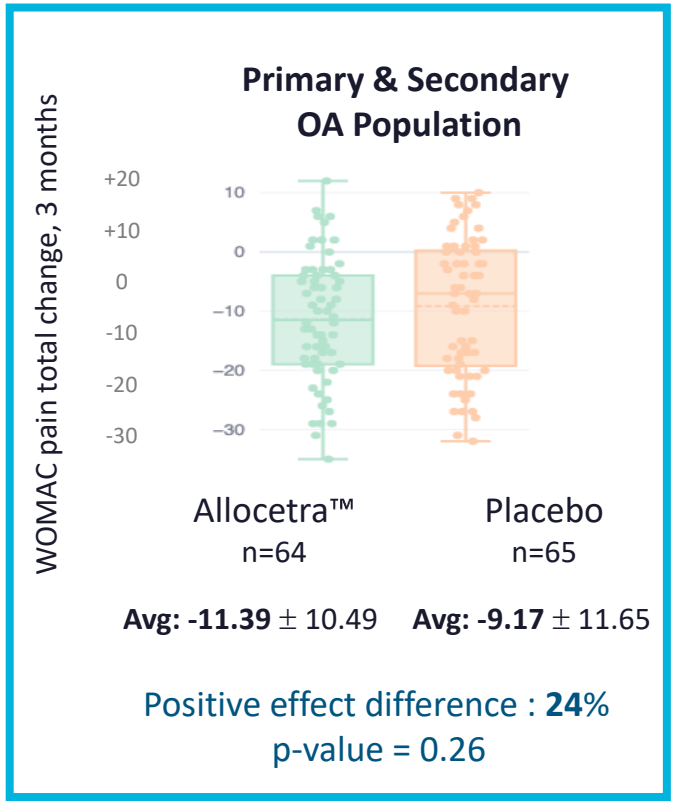
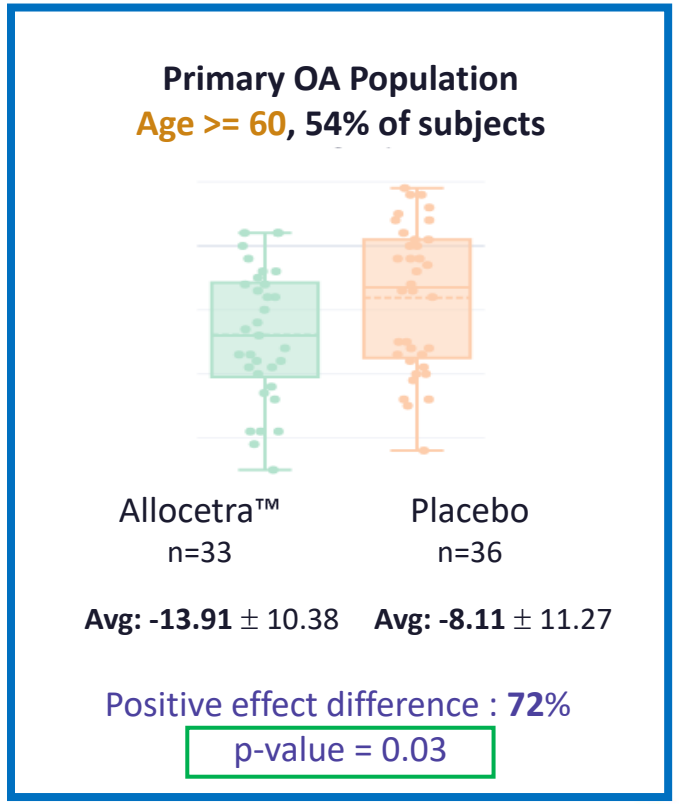
24% POSITIVE EFFECT ON WOMAC PAIN ACROSS STUDY PATIENTS; 72% IN PRIMARY OA PATIENTS – STATISTICALLY SIGNIFICANT AND CLINICALLY MEANINGFUL

- 54% of the study's population are Primary OA patients (n=69 out of 129)
- The data shows substantial, clinically meaningful, and highly statistically significant difference in treatment effect of Allocetra™ (pain reduction, the FDA's chosen Phase III endpoint) in Primary OA vs placebo, and reduced effect of Allocetra™ in Secondary OA





Placebo

Allocetra™

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CLINICALLY MEANINGFUL, STATISTICALLY SIGNIFICANT ACROSS EFFICACY ENDPOINTS IN PRIMARY OSTEOARTHRITIS PATIENTS

3-month endpoints, Primary OA subjects (age >=60, n=69, 54% of enrolled subjects)

	Efficacy measure	Allocetra™	Placebo	Difference	% Better than placebo	p-value	Reduction from baseline in Allocetra™ group	Delta between groups expressed as % from FDA's threshold for clinical significance (-10% to -15%)
	WOMAC total change	**-63.42** (n=33)	**-33.00** (n=36)	-30.42	**92%**	**0.012**	-48%	
Phase III primary endpoint →	WOMAC pain change	**-13.91** (n=33)	**-8.11** (n=36)	-5.80	**72%**	**0.030**	-49%	-65%
	WOMAC function change	**-44.97** (n=33)	**-21.47** (n=36)	-23.50	**109%**	**0.007**	-50%	
Phase III primary endpoint →	WOMAC pain & function change	**-58.88** (n=33)	**-29.58** (n=36)	-29.30	**99%**	**0.008**	-49%	-90%
	WOMAC stiffness & function change	**-49.52** (n=33)	**-24.89** (n=36)	-24.63	**99%**	**0.013**	-47%	
	NRS pain change	**-3.04** (n=34)	**-2.06** (n=37)	-0.98	**48%**	**0.070**	-49%	

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ALLOCETRA™ EFFECT IN PRIMARY OA: CLINICALLY MEANINGFUL, STATISTICALLY SIGNIFICANT, IRRESPECTIVE OF AGE THRESHOLD (REDUCTION IN PAIN)

WOMAC pain change 3 months, Primary OA population

Age >= 60 (54% of patients)

Allocetra™	Placebo
n=33	n=36
Avg: -**13.91** ± 10.38	Avg: -**8.11** ± 11.27

Positive effect difference : 72%

p-value = 0.030

Age >= 63 (40% of patients)

Allocetra™	Placebo
n=27	n=25
Avg: **-13.59** ± 10.06	Avg: **-4.80** ± 10.21

Positive effect difference : 183%

p-value = 0.0029

Age >= 65 (33% of patients)

Allocetra™	Placebo
n=23	n=19
Avg: **-14.52** ± 8.95	Avg: **-4.58** ± 10.16

Positive effect difference : 217%

p-value = 0.0017

Placebo

Allocetra™

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ALLOCETRA™ EFFECT IN PRIMARY OA: CLINICALLY MEANINGFUL, STATISTICALLY SIGNIFICANT, IRRESPECTIVE OF AGE THRESHOLD (CHANGE IN PAIN, STIFFNESS & FUNCTION)

WOMAC total change 3 months, Primary OA population

Age >= 60 (54% of patients)

Allocetra™ n=33

Avg: -**63.42** ± 48.80

Placebo n=36

Avg: -**33.00** ± 49.10

Positive effect difference : 92%

p-value = 0.0121

Age >= 63 (40% of patients)

Allocetra™ n=27

Avg: **-61.48** ± 45.27

Placebo n=25

Avg: **-18.24** ± 46.46

Positive effect difference : 237%

p-value = 0.0013

Age >= 65 (33% of patients)

Allocetra™ n=23

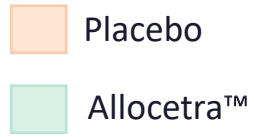
Avg: **-65.13** ± 39.50

Placebo n=19

Avg: **-14.47** ± 45.24

Positive effect difference : 350%

p-value = 0.0003



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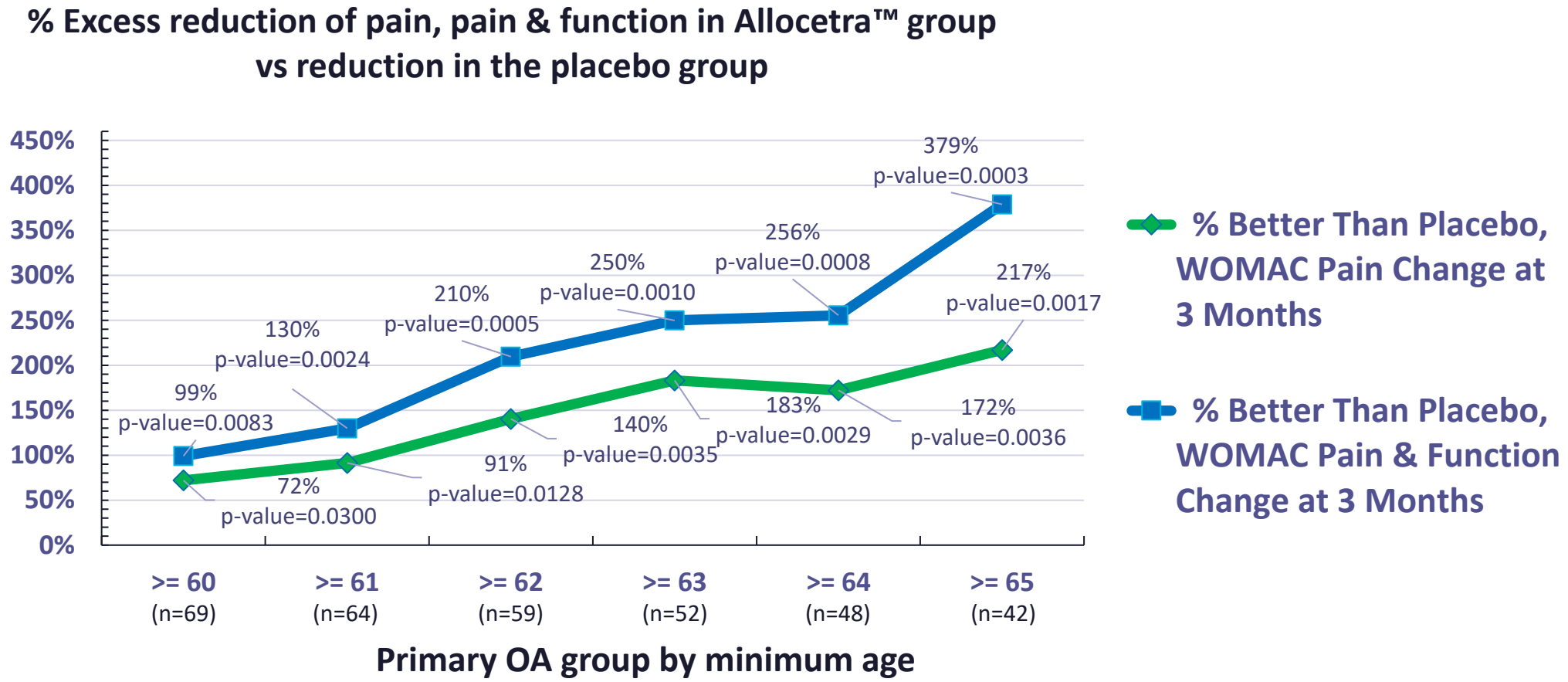
PHASE III ENDPOINTS: CLINICALLY MEANINGFUL, STATISTICALLY SIGNIFICANT, SUBSTANTIAL EFFECT SIZE, TRENDING WITH AGE



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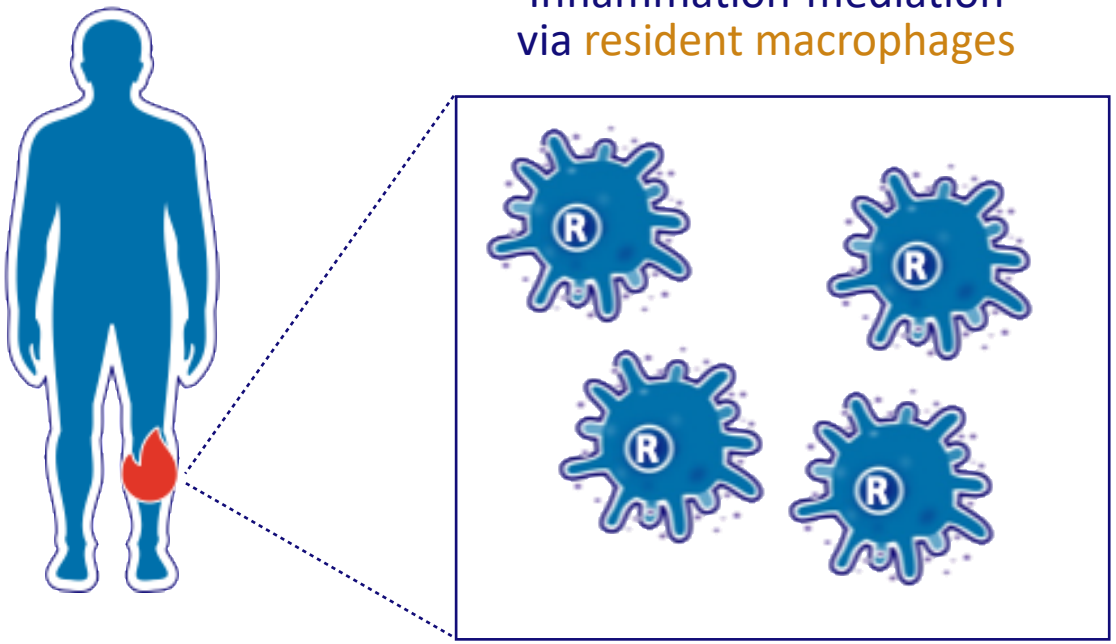
SUPERIOR ACTIVITY IN PRIMARY OA CONSISTENT WITH THE PROPOSED MECHANISM OF ACTION OF ALLOCETRA™

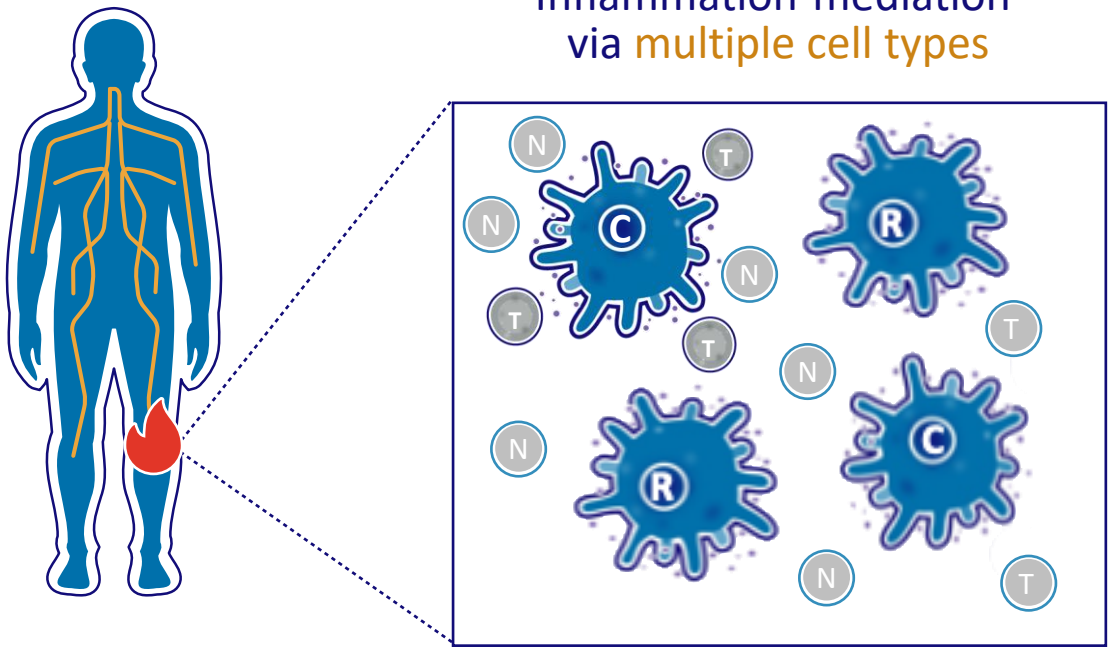
Primary Osteoarthritis

Inflammation-mediation
via resident macrophages



Secondary Osteoarthritis

Inflammation-mediation
via multiple cell types



Resident macrophage, **interacts well** with Allocetra™

Circulating macrophage, may **interact differently** with Allocetra™

Neutrophil cell

T-cell

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SAFETY PROFILE: ALLOCETRA™ DEMONSTRATED A FAVORABLE SAFETY PROFILE, NO RELATED SERIOUS ADVERSE EVENTS WERE REPORTED

- As observed also in earlier clinical data in severe OA subjects, some patients injected with Allocetra™ experienced local responses following injection (84% of patients treated with Allocetra™, vs. 36% for placebo)
- Local responses mostly involved some knee pain or discomfort (73% of patients treated with Allocetra™, vs. 79% for placebo), and might have included knee swelling or limitation in range of motion (79% of patients treated with Allocetra™, vs. 33% for placebo)
- The events usually presented within 1-2 days following injection (average 1 day), and were mostly mild to moderate (93% of events), and transient (average duration 6 days for Allocetra™, vs. 10 days for placebo)
- Patients were advised of the possibility of such reactions to occur, and guided that symptoms may be alleviated with rest, ice packs on the knee, compression bandages, and knee elevation. If needed, they were allowed to take NSAIDs for a few days
- Overall, patients' willingness to continue with treatments was minimally impacted by the side effects, only 7.5% of patients treated with Allocetra™ opted to discontinue subsequent injections due to adverse events

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ENX-CL-05-001: PLANNED PHASE IIb

Randomized, double-blind, placebo-controlled, multi-country study

Patient criteria:

Primary OA patients with symptomatic moderate to severe knee OA who have failed to respond to conventional OA therapy;

Age 60/65-80 years;

Kellgren-Lawrence (K-L) Grade 2 or 3.

Phase IIb: Randomized, double-blind, placebo-controlled

- Allocetra™ (1 or 2 doses) Vs. Placebo , 3 injections in total, each injection 2 weeks from the previous injection
- 75 patients per arm

Endpoints:

Primary:
3-month change in WOMAC pain
OR
3-month change in WOMAC pain & function

Safety and tolerability

Secondary:
3 & 6-month change in WOMAC total, NRS pain, and response assessments

NRS=numerical rating scale. WOMAC= Standard knee questionnaire evaluating pain, stiffness & physical function

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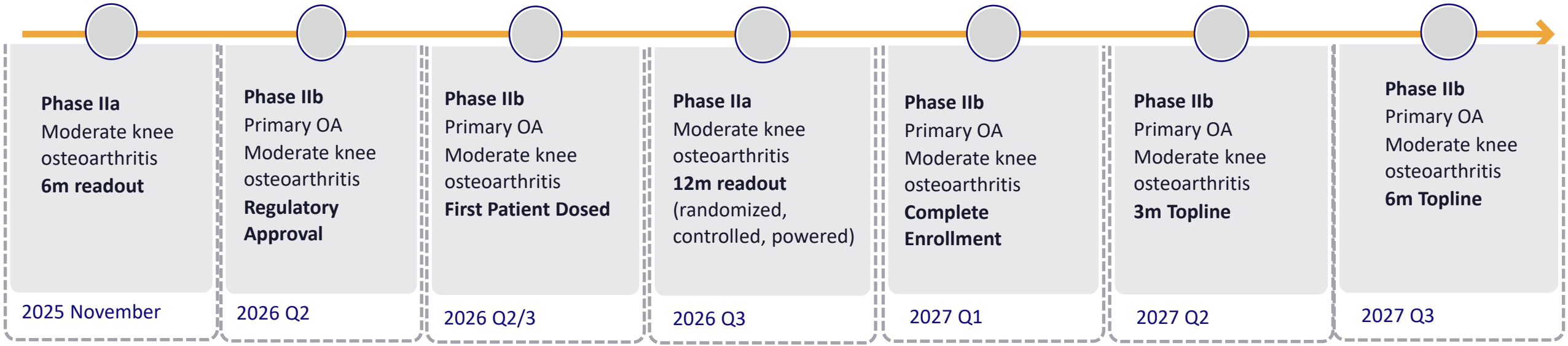
SHORT AND LONG TERM TARGET MILESTONES



Initiation and potential finalization of partnership discussions

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SUMMARY: 3-MONTH TOPLINE DATA – ENX-CL-05-001

- Study objectives met
  - Allocetra™ demonstrated a favorable safety profile, no related serious adverse events were reported
  - 72% avg positive effect in pain reduction, 99% in increased function (Phase III endpoints) for Primary OA patients
    - Clinically meaningful with high statistical significance of intended Phase III endpoints in the planned Phase III population, as well as multiple secondary endpoints
    - Positive effect vs placebo exceeds FDA's effectiveness thresholds by more than 65%
    - Robust and consistent effect, aligned with the proposed MOA of Allocetra™
  - Osteoarthritis: a growing market with significant potential and unmet medical need with Primary OA responders representing more than 50% of the ~$7BN KOA market
- Simple manufacturing process, highly attractive KOA treatment cycle at estimated total COGS (3 injections) of ~$450, allowing competitive pricing well within the range of high-end solutions
- We believe Allocetra™ has strong potential to become the therapy of choice for primary knee osteoarthritis patients

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THANK YOU