

Arctic Bioscience

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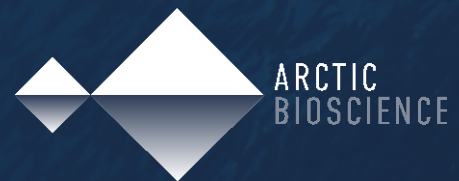
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Improving quality of life for people with **inflammatory disorders**





Developing and commercializing pharmaceutical and nutraceutical products based on **unique bioactive marine compounds**, utilizing proprietary technology and methodology

2023 highlights

Phase IIb clinical trial for HRO350, the HeROPA-study, more than 75% recruited
 Recruitment of a total 519 patients

Solid liquidity position

NOK 126 million as of Q3 2023 in available liquidity

Approx 100% increase in Nutra revenue the last 2 years

Financial results in line with expectations and budgets

YTD Q3 gross margin 34% /
 adj. EBITDA MNOK -29

More than 40 nutra brands globally contain ROMEGA®

Several strong brands in the USA and Europe have launched products with ROMEGA® during 2023

Kotler strategic partnership continues to develop well

Extensive marketing efforts and increasing sales in the Chinese market

Acquisition of Arctic Algae AS

Foundation for future expansion of our product portfolio into marine algal oils



Nutra Business development

Global nutra business with distribution via B2B,B2C and partner channels

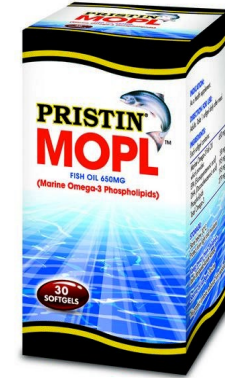


Based on extracts from the caviar of wild-caught North Atlantic herring
Phospholipid omega-3 products - especially rich in DHA



Romega abroad

Present in EU, US, Asia, China, South America and Middle East



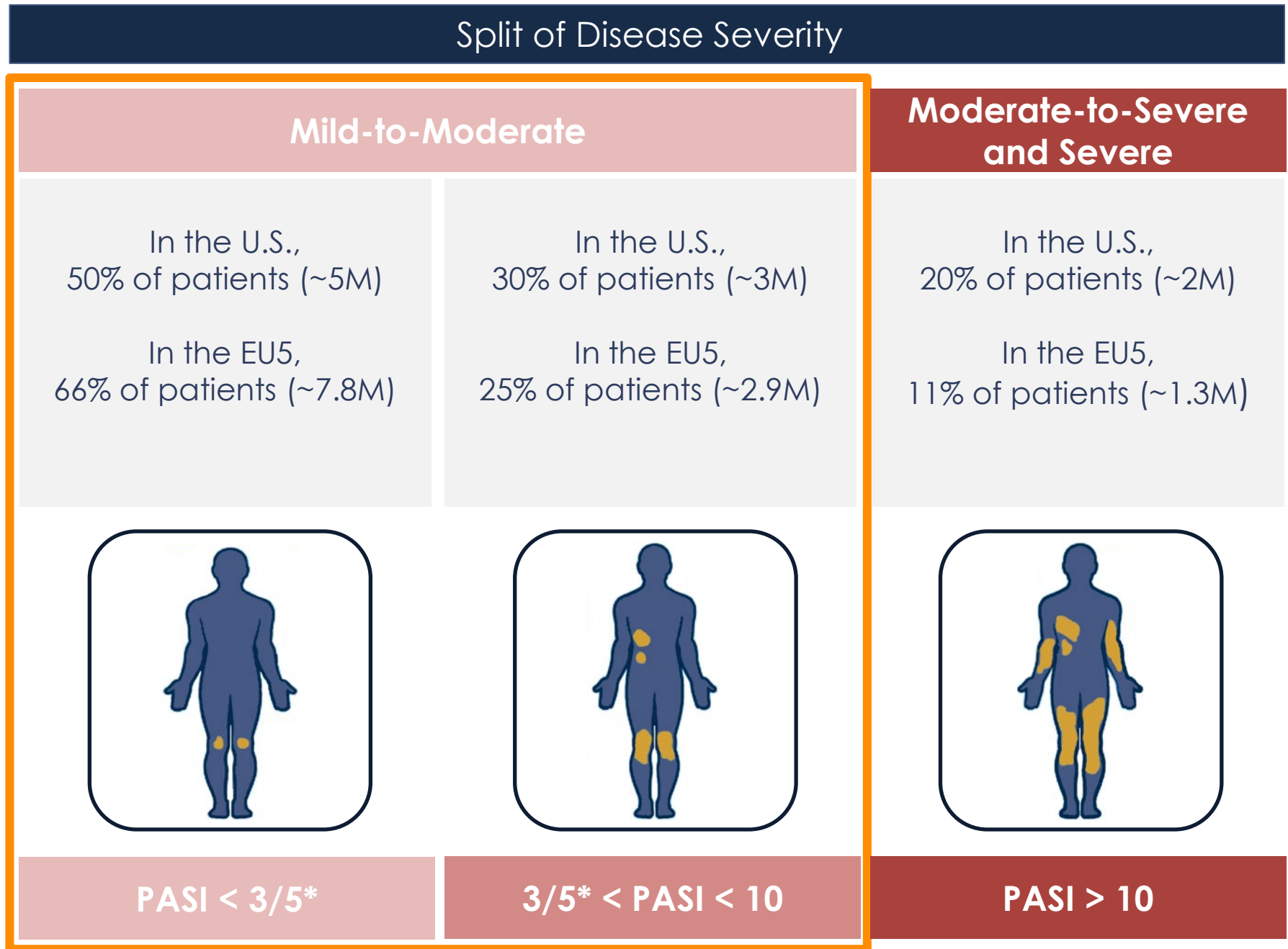


Pharma Development

HRO350 Strategic Positioning: mild-to-moderate psoriasis

~18.7M mild-to-moderate patients in the U.S. and EU5

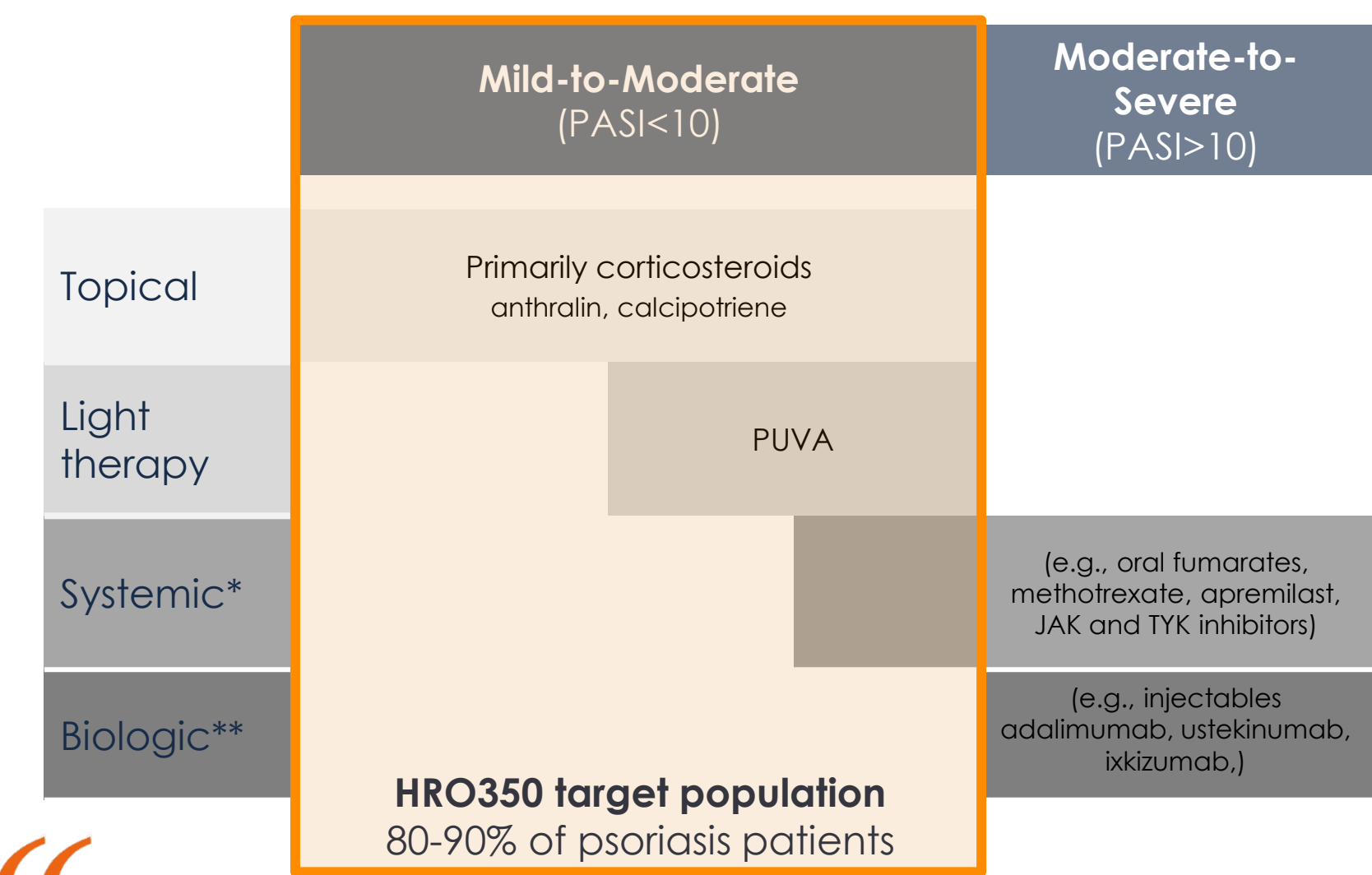
- **~22.5M total** psoriasis patients across severity types (~10.7 U.S. and ~11.8 EU5)
- **~80% of U.S.** patients and **~90% of EU5** patients have **mild-to-moderate** psoriasis
- **HRO350 is targeting a total addressable market of ~18.7M mild-to-moderate psoriasis patients**



*Split between mild and moderate patients varies in the literature.
 Sources: HRO350 Commercial Opportunity Assessment in Psoriasis, IQVIA; WHO Global Report on Psoriasis; Rendon. Int J Mol Sci. 2019 Mar; 20(6): 1475; UpToDate; American Academy of Dermatology Association; Papp. Dermatol Ther. 11:1053; 2021; National Psoriasis Foundation; Evaluate Pharma 2022 Psoriasis Market Size, November 2022 Analysis.

HRO350 meets an unmet medical need for patients with non-severe psoriasis

Market opportunity in mild-to-moderate disease



“The **biggest unmet need is that of an oral therapy that is totally safe and effective.** We have some terrific biologics out there, but the issue is not everybody likes to be injected, not even if it is once in 3 months.”

- Practicing Dermatologist, US

Properties of drug candidate HRO350

Administration	Oral (soft capsules)
Active substance	First-in-class active pharmaceutical ingredient (API)
Psoriasis indication	Mild-to-moderate disease
Severity at inclusion	Few treatment options for non-severe disease
Efficacy level	Efficacy in mild to moderate disease demonstrated in pilot clinical trial
Quality of life	Improvement in quality of life demonstrated in pilot clinical trial
Safety profile	Well tolerated in pilot clinical trial
Monitoring	50% of competitive products require monitoring – unlikely needed for HRO350

“I **don’t like to use a lot of biologics for moderate patients.** Each new generation coming into market is **so expensive**, it costs so much to healthcare system. I would **prefer non-biologic, oral treatments.**”

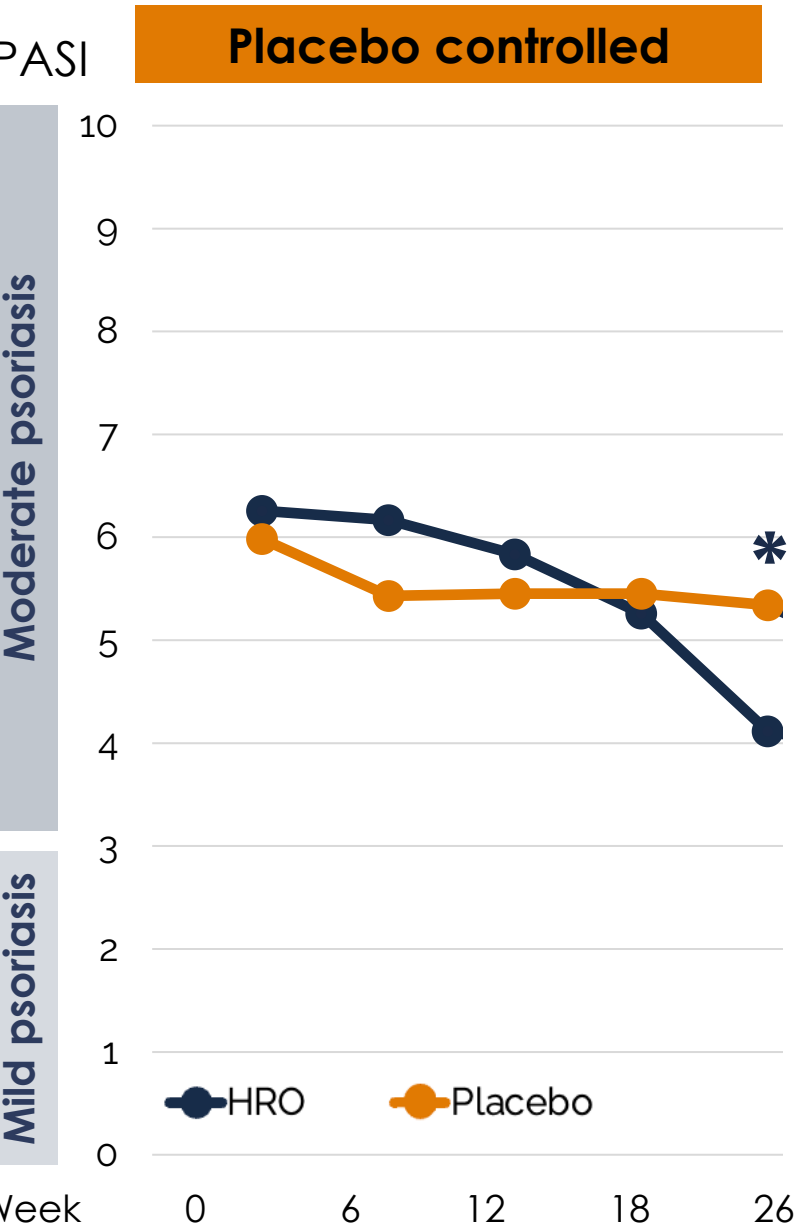
- Practicing Dermatologist, US

PASI: Psoriasis Area and Severity Index (0-72 point scale where >10 is moderate-to-severe and severe disease)
Source: HRO350 Commercial Opportunity Assessment in Psoriasis, IQVIA report
*Oral (e.g. fumarates, methotrexate, apremilast)
** Injectables (e.g.-. adalimumab, ustekinumab, ixkizumab)

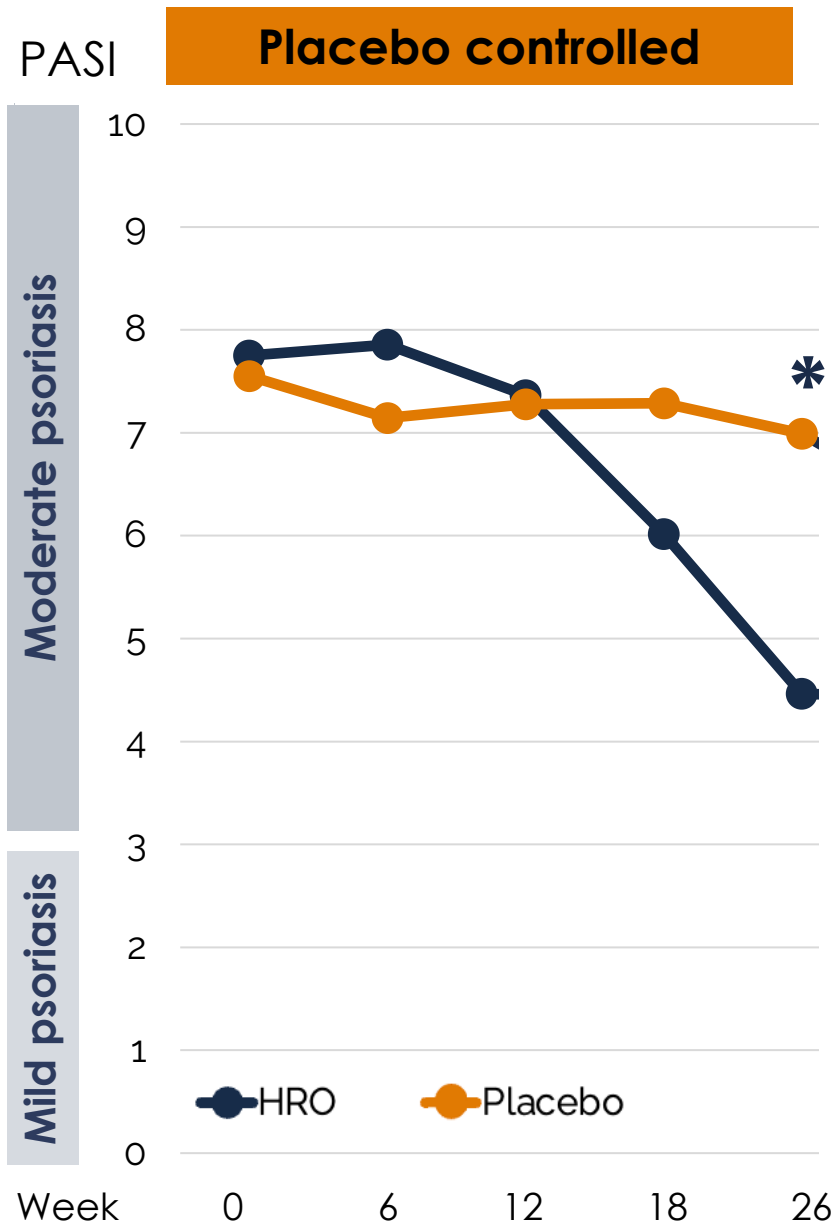
Statistically significant improvement in mild-to-moderate psoriasis demonstrated in randomized placebo controlled clinical study

HRO demonstrated statistically significant improvement in mean PASI score vs. placebo

All subjects with PASI < 10 at baseline



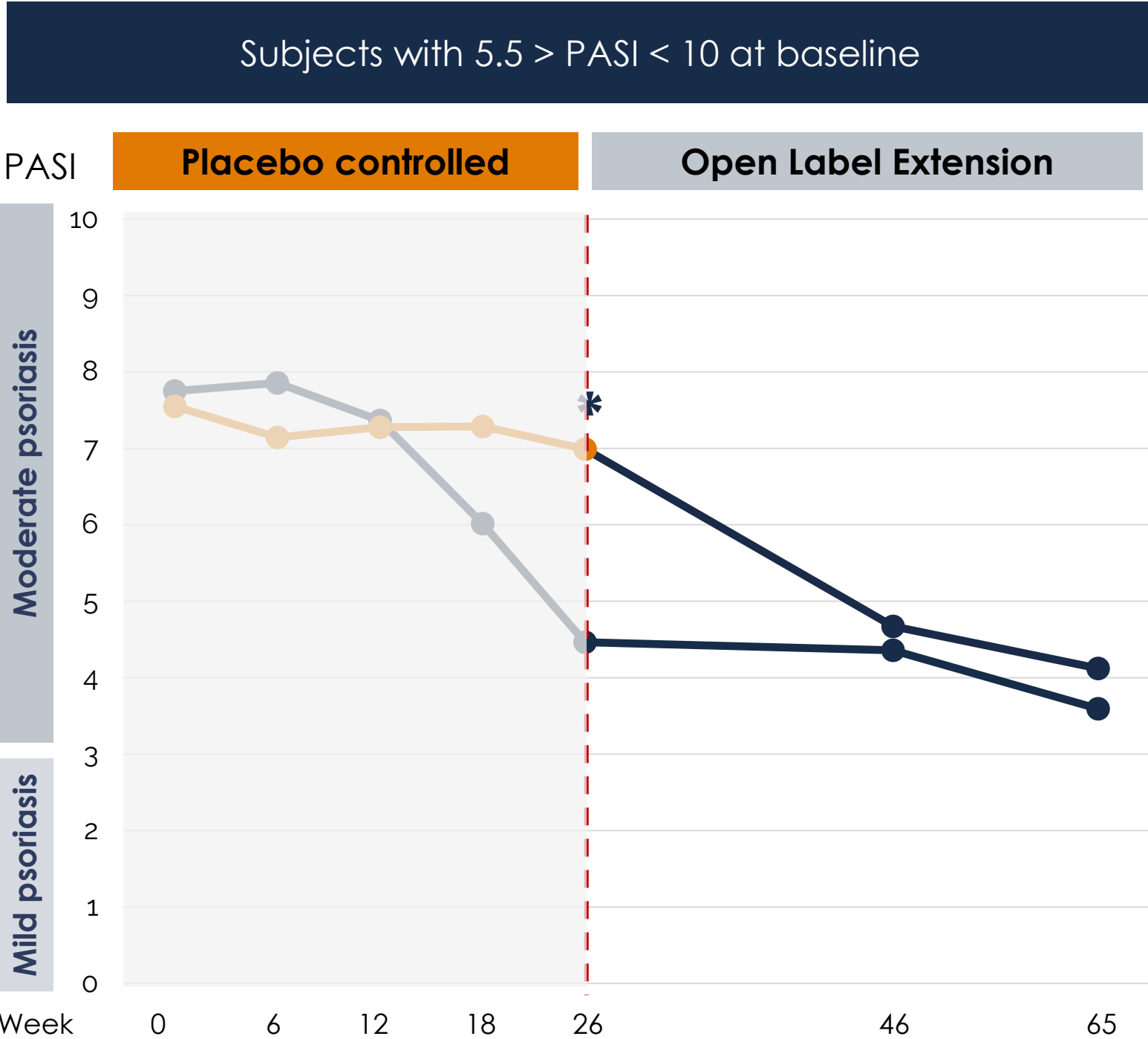
Subjects with PASI > 5.5 < 10 at baseline



RCT Study (week 0-26)	
Primary Endpoint	Post-Hoc Analyses
Change in mean PASI from baseline to week 26 (PASI < 10 at baseline)	Change in mean PASI from baseline to week 26 in patients with PASI > 5.5 < 10 at baseline
<p>p=0.0451</p> <p>Statistically significant mean change in PASI score in HRO vs. placebo group</p> <p>-1.1 pts (=64)</p>	<p>p=0.0157</p> <p>Statistically significant mean change in PASI score in HRO vs. placebo group</p> <p>-2.4 pts (n=31)</p>
<p>HRO was well tolerated, with no serious adverse events reported related to treatment</p> <p>No significant difference in AEs between treatment group and the placebo group</p>	

Open label extension to week 65 showed HRO efficacy is sustained

OLE to week 65 demonstrated long-term efficacy of HRO and clinically meaningful QoL benefit

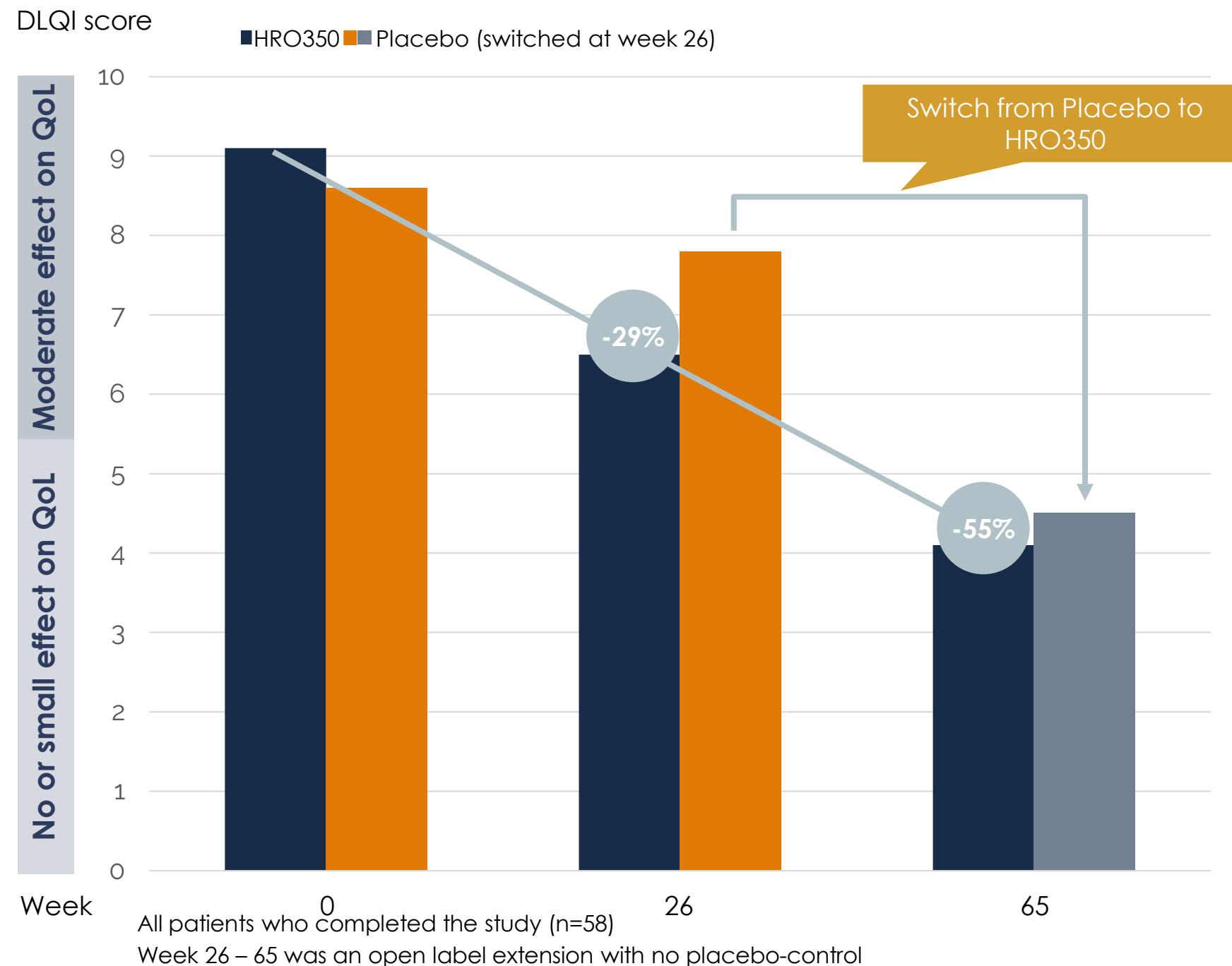


OLE period (week 26-60)		
Primary Endpoint	Secondary Endpoints	
Change in mean PASI from baseline in patients with PASI at baseline < 10	PSGA score change from baseline	Change in DLQI score from baseline
56% Mean change in PASI score in HRO – HRO group	53% Mean change in PASI score in the total population (n=58)	40% of Patients achieved PSGA 0/1 : clear or almost clear skin after 65 weeks (n=58)
52% Mean change in PASI score in Placebo – HRO group		55% Reduction in DLQI from baseline for Patients treated with HRO for 65 weeks 4.9 pts DLQI reduction in HRO-HRO group*

DLQI: Dermatology Life Quality Index (0-30 point scale where 30 is the maximum impact to life); PSGA: Physician Static Global Assessment, measures the physician's impression of the disease severity at a single point. *An absolute decrease of 4 points in the DLQI-score has been proposed as the Minimally Clinically Important Difference (MCID)
References: Tveit KS et al. A Randomized, Double-blind, Placebo-controlled Clinical Study to Investigate the efficacy of Herring Roe Oil for treatment of Psoriasis. Acta Derm Venereol. 2020 May 28;100(10):adv00154. doi: 10.2340/00015555-3507. Tveit KS et al. Long Term Efficacy and Safety of Herring Roe Oil in the Treatment of Psoriasis, a 39-week Open-label Extension Study. International Journal of Clinical and Experimental Medical Sciences. International Journal of Clinical and Experimental Medical Sciences. January 2021, 7 (1): 13-20..

Clinically meaningful improvement in Quality of Life

HRO demonstrated improvement in DLQI

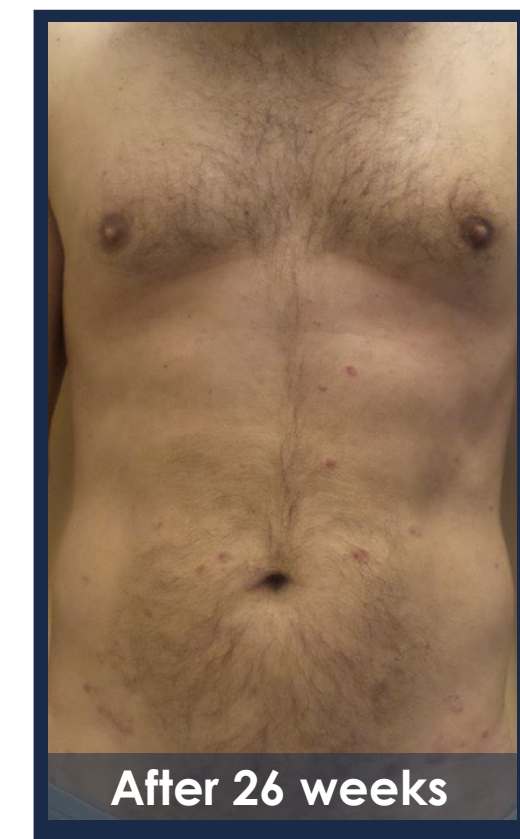


Key Takeaways

55% reduction in DLQI from baseline for patients treated with HRO350 for 65 weeks

4.9 points DLQI reduction in the HRO350-HRO350 group

An absolute decrease of 4 points in the DLQI-score has been proposed as MCID (Minimally Clinically Important Difference)



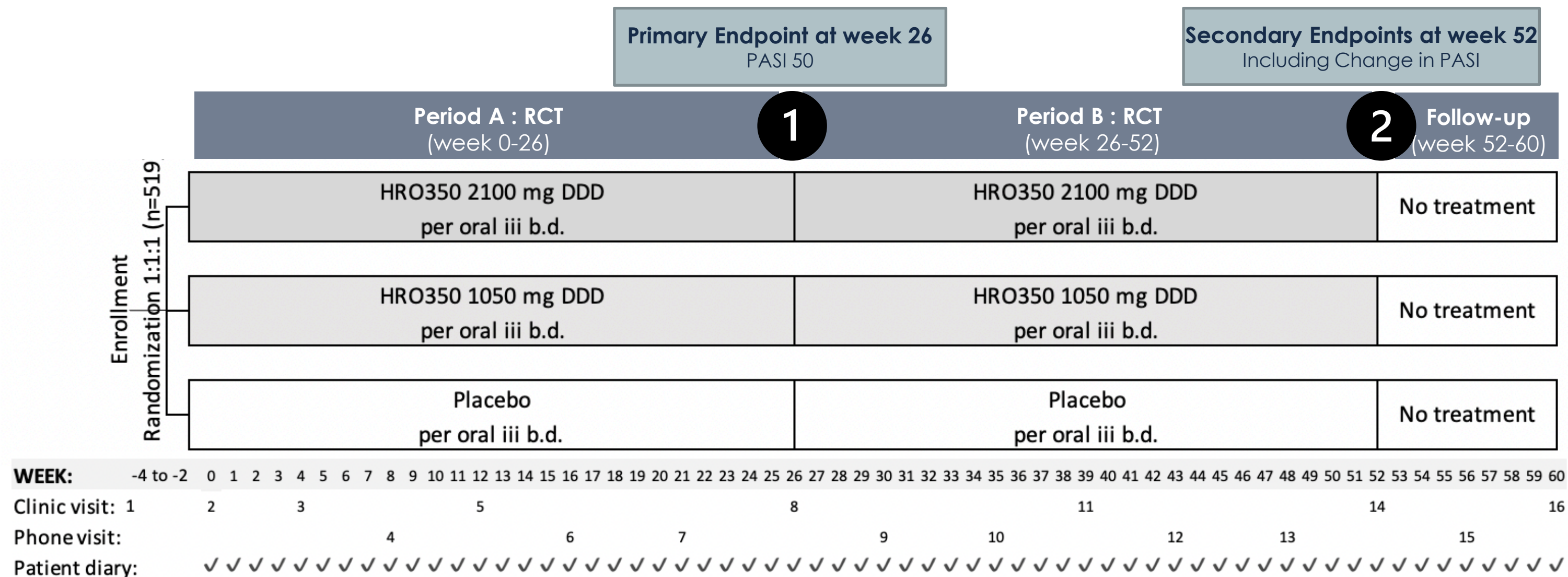
DLQI: Dermatology Life Quality Index (0-30 point scale where 30 is the maximum impact on life)
 DLQI 0-5: No or small effect on patient's life
 DLQI 6-10: Moderate effect on patient's life

References: Tveit KS et al. A Randomized, Double-blind, Placebo-controlled Clinical Study to Investigate the efficacy of Herring Roe Oil for treatment of Psoriasis. Acta Derm Venereol. 2020 May 28;100(10):adv00154. doi: 10.2340/00015555-3507. Tveit KS et al. Long Term Efficacy and Safety of Herring Roe Oil in the Treatment of Psoriasis, a 39-week Open-label Extension Study. International Journal of Clinical and Experimental Medical Sciences. International Journal of Clinical and Experimental Medical Sciences. January 2021, 7 (1): 13-20.). Data on file (PASI>5.5 week 26-15 months. Pictures courtesy of Dr. Tveit.

Phase IIb clinical plan & development milestones

Large phase IIb study will investigate efficacy, safety, and dose of HRO350 versus placebo

- **Large international multicenter randomized placebo-controlled** Phase IIb study including **519 patients**
- Protocol designed based on **Scientific Advice from the EMA**
- **Phase IIb study is approved and ongoing** in the UK, Germany, Poland, Finland and Norway
- Study endpoints include **PASI score** and multiple secondary endpoints including **steroid sparing abilities** and **QoL** parameters



HeROPA

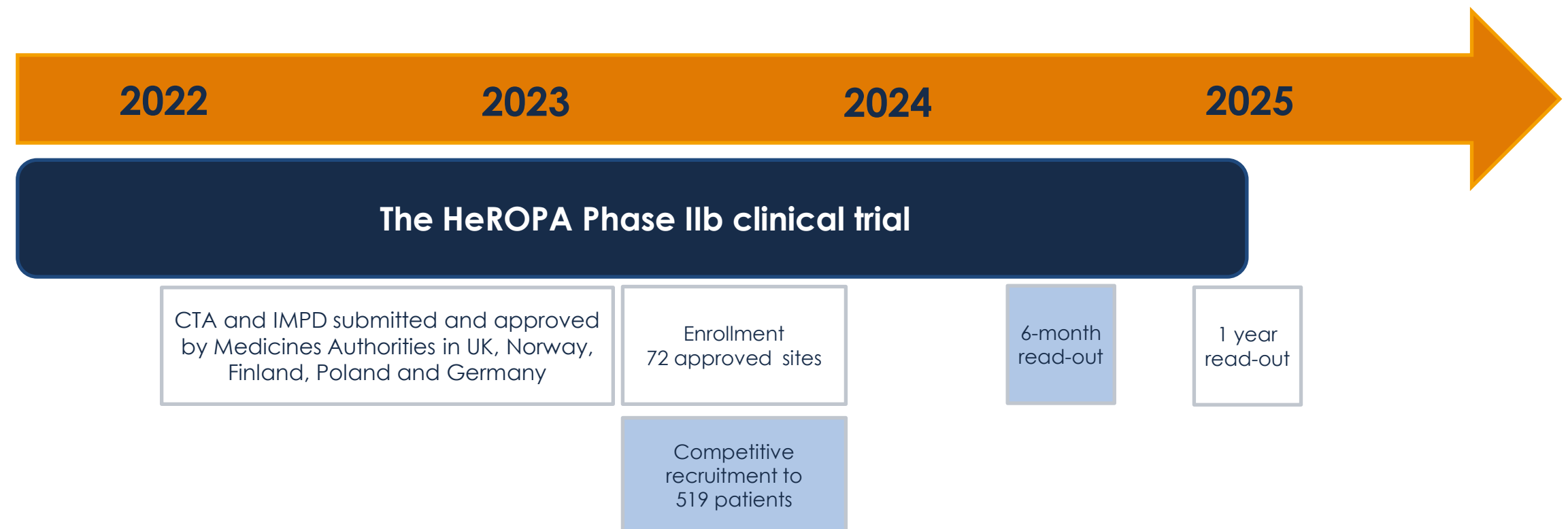
HeROPA phase IIb study progress and status December 2023

To investigate efficacy, safety, and dose of HRO350 versus placebo in mild-to-moderate psoriasis

Recruitment currently progressing well

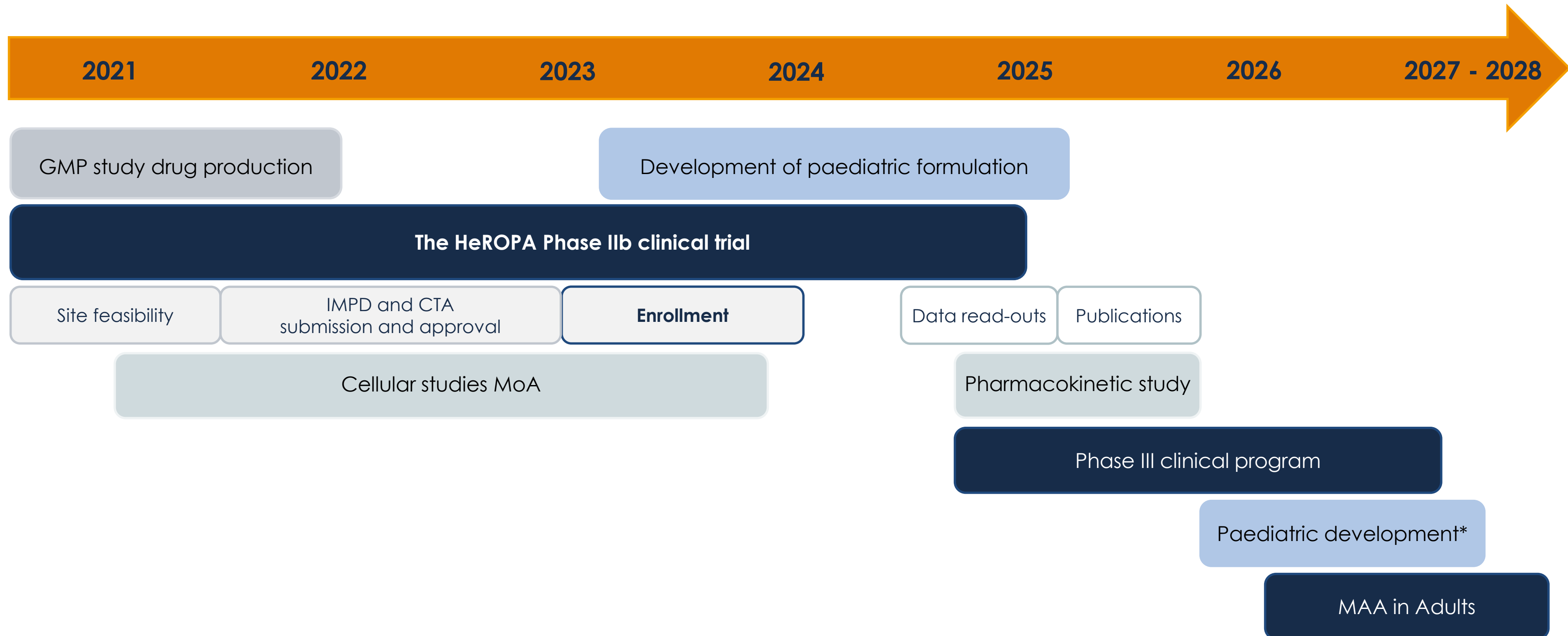
- More than 75% of the total number of patients needed have been recruited
- Competitive recruitment to 519 patients

6-month read-out planned for mid 2024



HeROPA

HRO350 clinical program progress and timeline update



Ongoing cellular studies to investigate MoA of HRO350

HRO350 is a unique lipid matrix with phospholipid esters as API

Cellular studies at Norwegian R&D institutions are ongoing to further investigate **mode-of-action in psoriasis²**

Key objective is to gain a deeper understanding of the cellular mechanisms and structural characteristics of HRO350

Grant received from the Research Council of Norway

Project will be completed ultimo 2023

Data to be published 2024

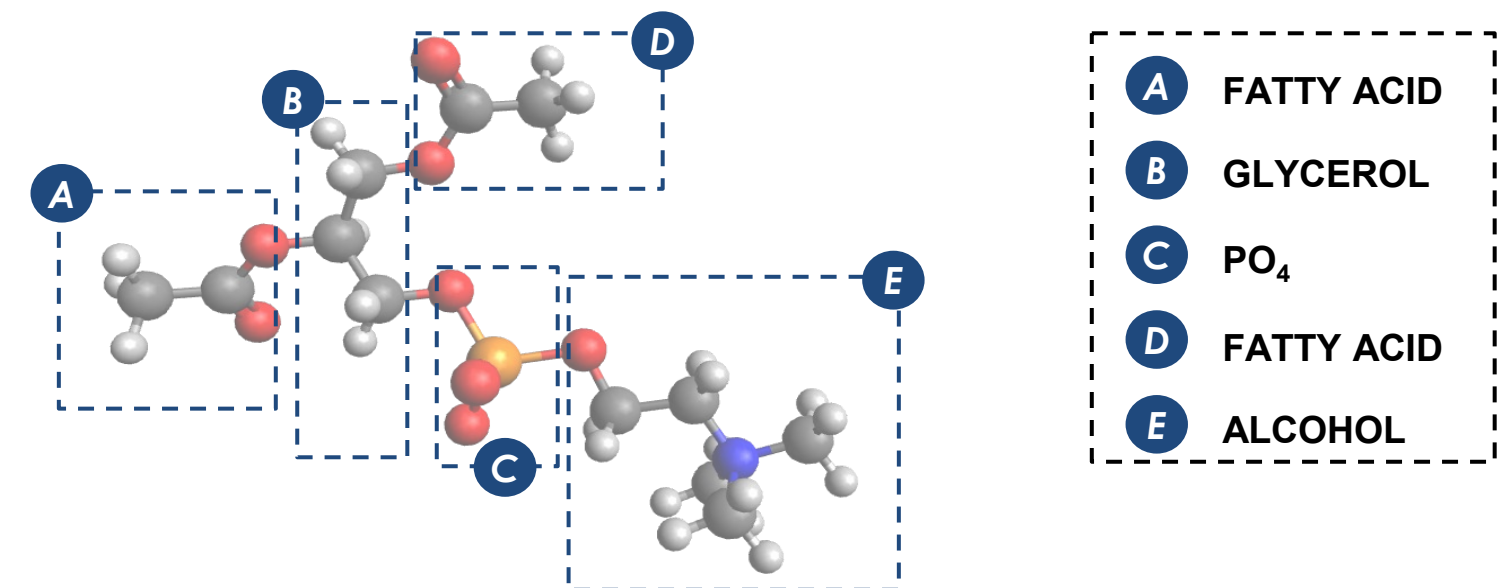
Data will be important for future marketing authorisation application and commercial partnerships

API: PEHeRo (Phospholipid Esters from Herring Roe)

IRIS Substance ID: 300000046327

EV Medicinal Product Code: PRD9919073

Core
structure of
phospholipid
esters from
herring roe



New data on immune cells and cytokine networks support the beneficial effect of HRO in mild-to-moderate psoriasis^{1,2}

Background and methods for the study

- Omega-3 polyunsaturated fatty acids (w3-PUFA) EPA and DHA have immunomodulatory properties³
- Severe psoriasis is associated with elevated inflammatory cytokines including IL-17, IL-23 and TNFα
- Cytokine elevation is often more moderate and difficult to measure with accuracy in mild-to-moderate patients
- **Purpose:** to study the impact of phospholipid bound docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) in peripheral blood
- **Method:** Measuring plasma concentration of 22 cytokines (n=58) and immune cell activation status (n=18) in peripheral blood

Results from the study

Changes in cytokine levels were observed during long-term supplementation with herring roe oil

- CCL2 levels decreased over time, and IFN-γR1 increased.
- Similarly, various therapeutic modalities (including light therapy) induce the decrease of CCL2 in the circulation.

Patients receiving HRO had alterations in peripheral blood immune cells compared to placebo controls

- Shift from naïve to effector CD4⁺ T cells and decreases of CD38 expression on CD4⁺ and CD8⁺ T cells, CD56bright NK cells and CD14⁺CD16⁻ classical monocytes.

Authors' conclusions: These findings support the beneficial effect of herring roe oil supplementation.

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Herring roe oil in treatment of psoriasis – influence on immune cells and cytokine network

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Background: Psoriasis is a chronic immune-mediated skin disease with systemic inflammation and comorbidities. Although the disease severity may vary over time, many patients suffer from mild to moderate disease. Often local treatment will be sufficient to control the symptoms, but they may have several side effects. ω-3 polyunsaturated fatty acids have shown promising results in clinical trials with mild-to-moderate psoriasis.

Methods: We explored the impact of phospholipid bound docosahexaenoic acid and eicosapentaenoic acid in a 3:1 ratio on immune cells and cytokine networks in peripheral blood of patients with psoriasis. We investigated the inter-relation of plasma cytokine levels and disease severity in 58 patients, and explored the status of circulating immune cell activity in 18 patients with non-severe psoriasis before and during herring roe oil supplementation. Plasma concentration of 22 cytokines was measured by Luminex technology and circulating immune cells were analyzed by multicolor flow cytometry.

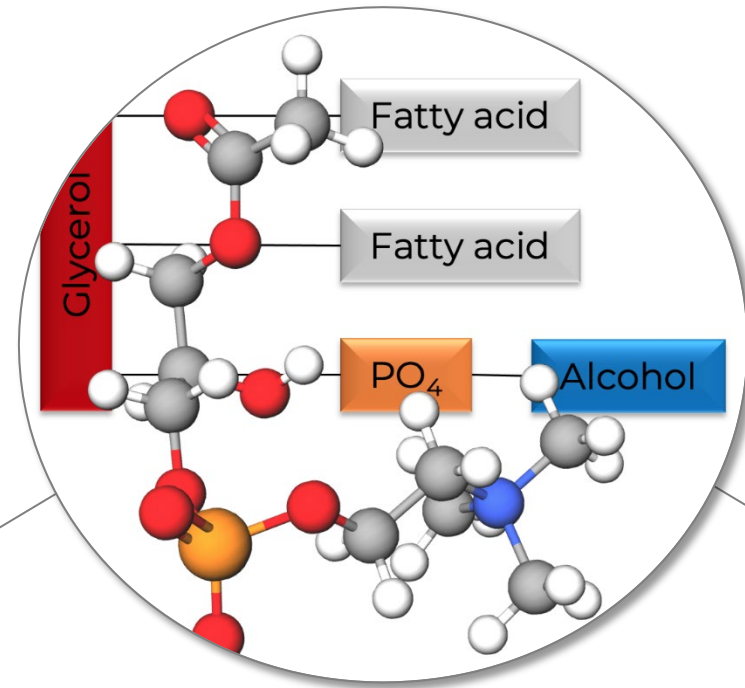
Results: CCL2 levels decreased over time, and IFN-γR1 increased, possibly related to the action of ω-3 polyunsaturated fatty acids. We observed a shift from naïve to effector CD4⁺ T cells and decreases of CD38 expression on CD4⁺ and CD8⁺ T cells, CD56^{bright} NK cells and CD14⁺CD16⁻ classical monocytes.

Conclusions: These findings support the beneficial effect of herring roe oil supplementation.

Platform technology with extensive potential beyond Psoriasis

Anecdotal evidence supporting HRO350's relevance across inflammatory diseases

Shared fundamental mechanism related to inflammation

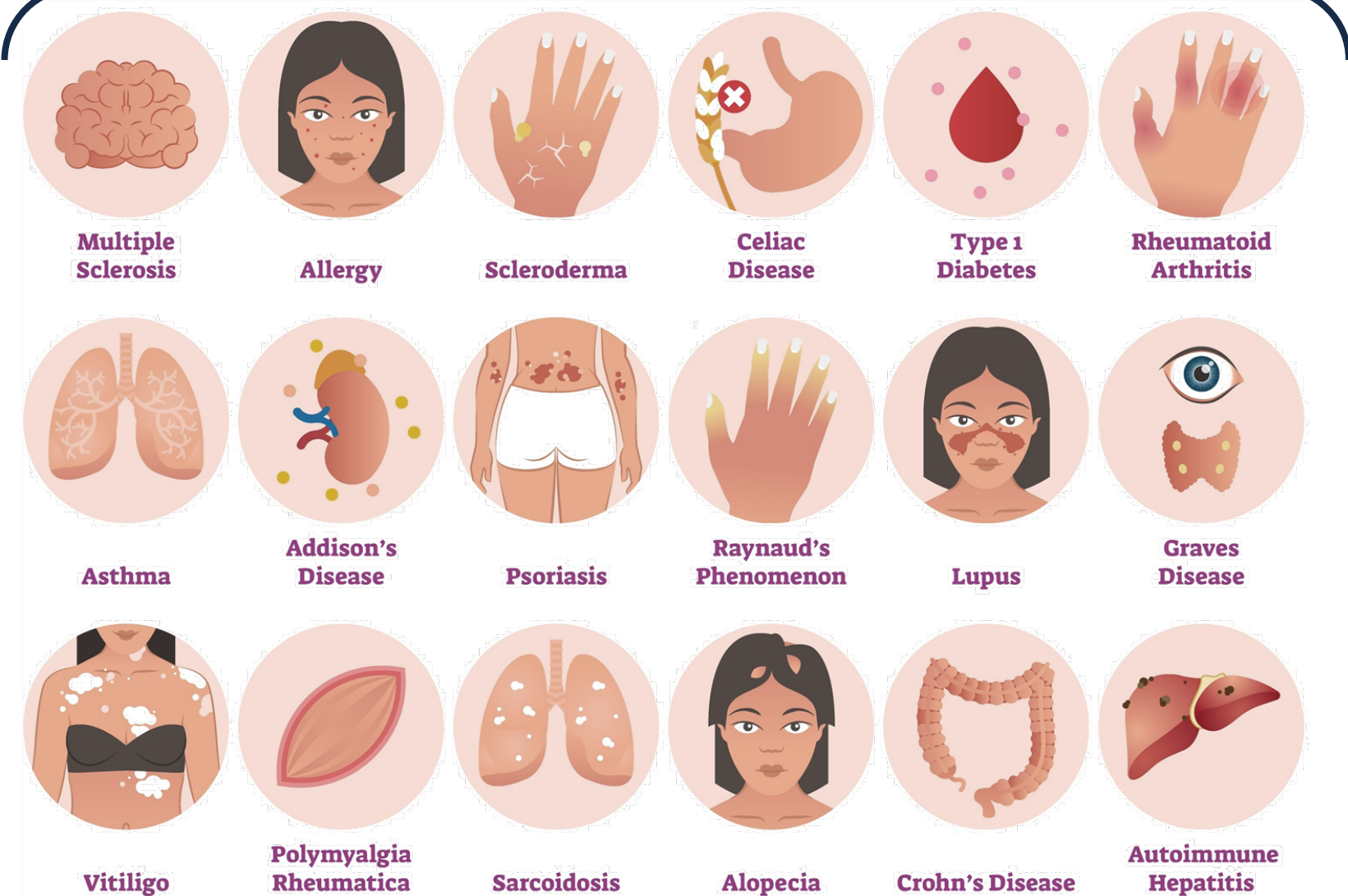


Phospholipids esters have metabolites with immuno-modulatory properties

HRO350 contains active substances with the potential to affect a number of molecular processes

Potential relevance in diseases associated with inflammatory pathologies

Disease states involving inflammatory processes



Arctic Orphan (ABS302): Novel orphan designation drug candidate for brain development in extremely premature infants

~15 million premature births annually worldwide¹

~5% are extremely premature (< 28 weeks)²

Extremely premature infants are **bereaved three months of the normal *in utero* development time**, do not have fully developed brains, and a **high risk of disability and complications**

Lipid drug candidate ABS302 is intended for the support for brain development and prevention of neurodevelopment complications in extremely premature infants

Current project plan ABS302

Quality/CMC/regulatory affairs

- Product Specifications and QTPP
- Scientific advice processes
- Regulatory dossier on tox program

Process and formulation development

- Process development API
- Technical development, stability testing

GLP manufacture for pre-clinical program

- Manufacture of API and GLP batches

Preclinical program

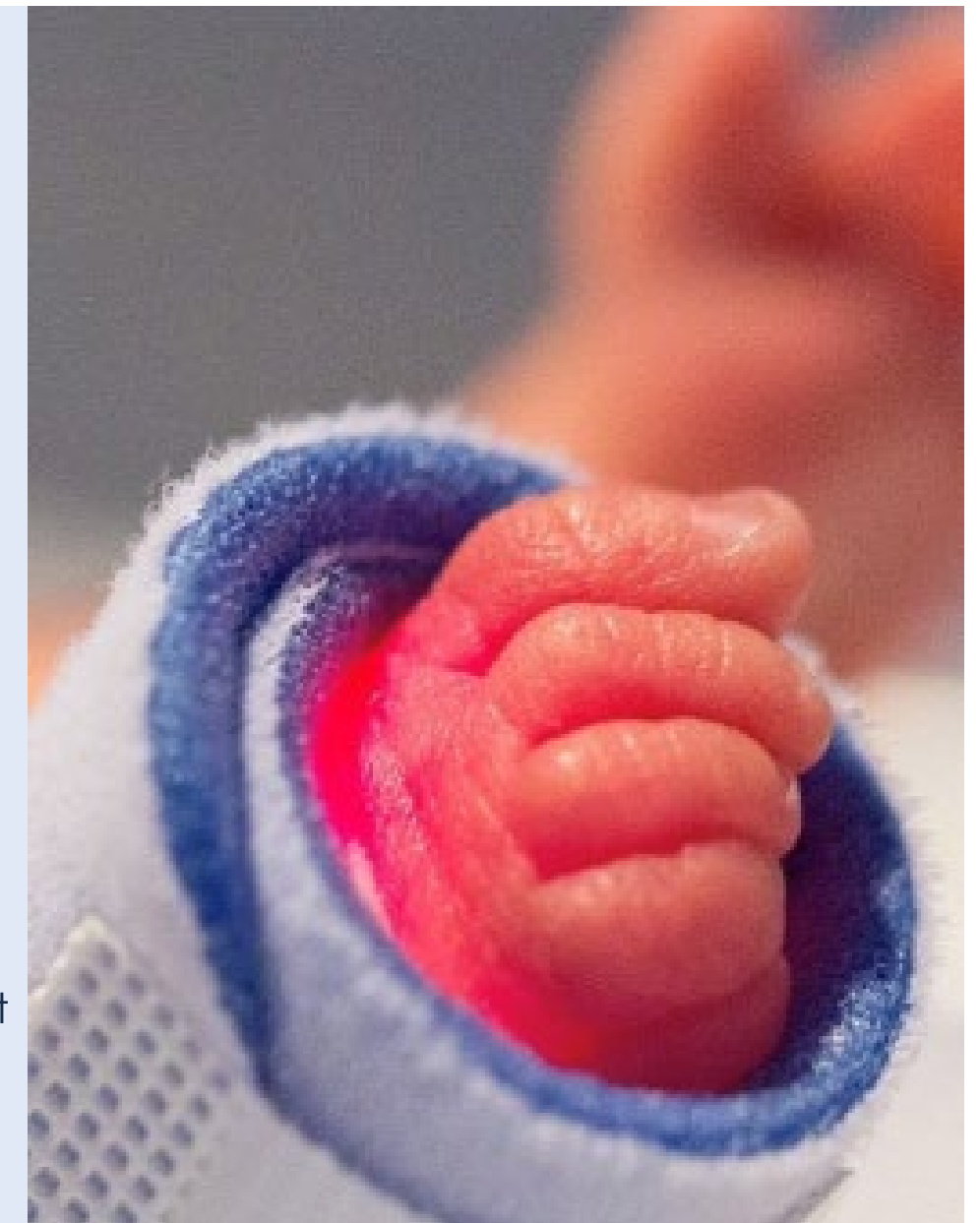
- Animal models

GMP manufacture of clinical materials

- Scale-up and GMP process development

Clinical development of ABS302

- Collaboration with Smerud Medical



Summary



Unmet Need and Market Opportunity: Psoriasis is a chronic, inflammatory disease, with few and inadequate treatment options available for patients with mild-to-moderate disease; current market size is estimated at ~18.7M patients in the US and EU5 alone



Unique MOA: HR0350 is a first-in-class orally administered asset with phospholipid esters as API, produced from herring roe under GMP conditions. Mode-of-Action investigations ongoing, including on metabolites of phospholipid esters with immuno-modulatory properties



Compelling Clinical Data: Strong scientific rationale and PoC provided by promising statistically significant clinical efficacy of HRO in mild-to-moderate psoriasis subjects as demonstrated in a randomized, placebo-controlled clinical study



Clinical Development Plan: HRO350 is Phase IIb asset, and has received CHMP Scientific Advice on Phase IIb study design and drug development program; Currently more than 75% recruited; Paediatric Investigation Plan agreed with EMA