

Developing innovative therapies in NASH

Corporate Presentation April 2024





DISCLAIMER

This presentation contains "forward-looking statements" within the meaning of the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical facts, included in this press release are forward-looking statements.

These statements include, but are not limited to, forecasts and estimates with respect to Inventiva's cash resources and potential financing or strategic options and potential counterparties, forecasts and estimates with respect to Inventiva's pre-clinical programs and clinical trials, including design, duration, timing, recruitment costs, screening and enrollment for those trials, including the ongoing NATiV3 Phase III clinical trial with lanifibranor in MASH/NASH, and the results and timing thereof and regulatory matters with respect thereto, clinical trial data releases and publications, the information, insights and impacts that may be gathered from clinical trials, the potential therapeutic benefits of Inventiva's product candidates, including lanifibranor alone and in combination with empagliflozin in patients with MASH/NASH and T2D, the potential of lanifibranor to address patient needs, the estimated market size and patient population, potential regulatory submissions, approvals and commercialization. Inventiva's pipeline and preclinical and clinical development plans, the expected benefit of having received Breakthrough Therapy Designation from the FDA and NMPA, including its impact on the development and review timeline of Inventiva's product candidates, the potential development of and regulatory pathway for odiparcil, future activities, expectations, plans, growth and prospects of Inventiva and its partners, the expected benefit of Inventiva's partnerships and Inventiva's ability to achieve milestones and receive potential milestones under its partnership agreements. Certain of these statements, forecasts and estimates can be recognized by the use of words such as, without limitation, "believes", "anticipates", "expects", "intends", "plans", "seeks", "estimates", "may", "will", "would", "could", "might", "should", "designed", "hopefully", "target", "potential", "opportunity", "possible", "aim", and "continue" and similar expressions. Such statements are not historical facts but rather are statements of future expectations and other forward-looking statements that are based on management's beliefs. These statements reflect such views and assumptions prevailing as of the date of the statements and involve known and unknown risks and uncertainties that could cause future results. performance, or future events to differ materially from those expressed or implied in such statements. Actual events are difficult to predict and may depend upon factors that are beyond Inventiva's control. There can be no guarantees with respect to pipeline product candidates that the clinical trial results will be available on their anticipated timeline, that future clinical trials will be initiated as anticipated, that product candidates will receive the necessary regulatory approvals, or that any of the anticipated milestones by Inventiva or its partners will be reached on their expected timeline, or at all. Future results may turn out to be materially different from the anticipated future results, performance or achievements expressed or implied by such statements, forecasts and estimates due to a number of factors, including that Inventiva cannot provide assurance on the impacts of the SUSAR on enrollment or the ultimate impact on the results or timing of the NATiV3 trial or regulatory matters with respect thereto, that Inventiva is a clinical-stage company with no approved products and no historical product revenues, Inventiva has incurred significant losses since inception, Inventiva has a limited operating history and has never generated any revenue from product sales, Inventiva will require additional capital to finance its operations, in the absence of which, Inventiva may be required to significantly curtail, delay or discontinue one or more of its research or development programs or be unable to expand its operations or otherwise capitalize on its business opportunities and may be unable to continue as a going concern. Inventiva's ability to obtain financing and to enter into potential transactions, Inventiva's future success is dependent on the successful clinical development, regulatory approval and subsequent commercialization of current and any future product candidates, preclinical studies or earlier clinical trials are not necessarily predictive of future results and the results of Inventiva's and its partners' clinical trials may not support Inventiva's and its partners' product candidate claims, Inventiva's expectations with respect to its clinical trials may prove to be wrong and regulatory authorities may require holds and/or amendments to Inventiva's clinical trials, Inventiva's expectations with respect to the clinical development plan for lanifibranor for the treatment of MASH/NASH may not be realized and may not support the approval of a New Drug Application, Inventiva and its partners may encounter substantial delays beyond expectations in their clinical trials or fail to demonstrate safety and efficacy to the satisfaction of applicable regulatory authorities, the ability of Inventiva and its partners to recruit and retain patients in clinical studies, enrollment and retention of patients in clinical trials is an expensive and time-consuming process and could be made more difficult or rendered impossible by multiple factors outside Inventiva's and its partners' control, Inventiva's product candidates may cause adverse drug reactions or have other properties that could delay or prevent their regulatory approval, or limit their commercial potential, Inventiva faces substantial competition and Inventiva's and its partners' business, and preclinical studies and clinical development programs and timelines, its financial condition and results of operations could be materially and adversely affected by geopolitical events, such as the conflict between Russia and Ukraine and related sanctions, impacts and potential impacts on the initiation, enrollment and completion of Inventiva's and its partners' clinical trials on anticipated timelines and the state of war between Israel and Hamas and the related risk of a larger conflict, health epidemics, and macroeconomic conditions, including global inflation, rising interest rates, uncertain financial markets and disruptions in banking systems. Given these risks and uncertainties, no representations are made as to the accuracy or fairness of such forward-looking statements, forecasts, and estimates. Furthermore, forward-looking statements, forecasts and estimates only speak as of the date of this press release. Readers are cautioned not to place undue reliance on any of these forward-looking statements.

Please refer to the Universal Registration Document for the year ended December 31, 2023, filed with the Autorité des Marchés Financiers on April 3, 2024, and the Annual Report on Form 20-F for the year ended December 31, 2023, filed with the Securities and Exchange Commission on April 3, 2024. Other risks and uncertainties of which Inventiva is not currently aware may also affect its forward-looking statements and may cause actual results and the timing of events to differ materially from those anticipated. All information in this press release is as of the date of the release. Except as required by law, Inventiva has no intention and is under no obligation to update or review the forward-looking statements referred to above. Consequently, Inventiva accepts no liability for any consequences arising from the use of any of the above statements.

Key take-aways

A Phase III asset in NASH	A Phase III ready program in MPS ⁽¹⁾	R&D Capabilities and Cash Position
Lanifibranor: only pan-PPAR agonist in clinical development for NASH	Odiparcil: a GAG reduction therapy to potentially treat several forms of MPS	R&D capabilities including wholly- owned 'pharma scale' discovery facilities with a discovery engine
Positive Phase IIb results with statistically significant efficacy on histological NASH resolution and one stage fibrosis reduction	Reduces GAG accumulation in multiple organs in MPS VI models. Well-tolerated in MPS VI patients and in 1000s of patients previously tested ⁽²⁾	focused on nuclear receptors, transcription factors and epigenetic targets
Positive Phase II, Proof-of-Concept, results of LEGEND with lanifibranor/empagliflozin announced in Q1 2024	Functional improvements to mobility and respiratory function and clinical efficacy	Clinical Ops team in place in Europe and the United States
Mechanism of action addressing all key features of NASH	signals in both ERT treated patients and ERT-naïve MPS VI patients	Strong U.S. and European shareholder base and experienced senior management team
Breakthrough Therapy Designation granted by FDA and Chinese NMPA	MPS VI Orphan Drug Designation granted in the U.S. and in the EU. Rare Pediatric Disease Designation in MPS VI granted in the U.S.	Cash position allowing a runway until the beginning of Q3 2024
Pivotal Phase III initiated in Q3 2021 with topline results expected H1 2026	Guidance on path to regulatory submission from FDA with a single	
Licensing and commercialization agreements in Greater China, Japan and South Korea	Phase II/III trial Inventiva continues to review potential options to further develop odiparcil which may include pursuing a partnership	

(1) MPS: mucopolysaccharidosis ; (2) Trials conducted by GSK prior to Inventiva's founding

Management team with extensive global experience across all stages of drug development and commercialization



Frédéric Cren, MA/MBA, CEO and Co-Founder

- Wide expertise within the areas of R&D, marketing, strategy and commercial operations
- Held senior positions at Abbott, Fournier, Solvay Pharma and The Boston Consulting Group
- Former member of both Fournier and Solvay Pharma Executive Committees



Pierre Broqua, Ph.D., CSO and Co-Founder

- Successfully managed numerous research programs leading to the discovery, development and commercialization of innovative compounds, including lanifibranor and Degarelix/ Firmagon[®]
- Held several senior research positions at Fournier, Solvay Pharma and Abbott



Jean Volatier, MA, CFO

- Former Head of controlling at URGO & Financial Director International Operations of Fournier
- Held various positions as CFO
- Started his career with PwC in Paris and Philadelphia



Michael Cooreman, MD, CMO

Gastroenterologist-hepatologist

years in public equities and VC

Held global roles in several companies including Takeda Pharmaceuticals, Merck, Mitsubishi Tanabe, ImmusanT and Novartis



David Nikodem, Ph.D., VP U.S. Operations

Former buyside portfolio manager and analyst for +15

Alice Roudot-Ketelers, PharmD, COO

Previously in charge of all drug development programs and cross-functional teams in Chemistry, CMC, non-clinical and clinical development up to Phase III at one of the major biotech companies in the NASH field



Pascaline Clerc, Ph.D., EVP Strategy and Corporate Affairs

 Held global roles in academia, non-profit organization, government and biotech companies

Oral small molecule-focused discovery engine targeting nuclear receptors, transcription factors and epigenetic modulation



Power of discovery engine underpins deep pipeline of clinical and discovery stage assets

Deep pipeline

Program	Indication	Discovery	IND Enabling	Phase I	Phase II	Phase III
Lanifibranor	NASH	pan-PPAR				
Odiparcil	MPS VI	GAG cleara	ance			
Yap-Tead	Oncology					
TGF-β	► Fibrosis					

Key financials and shareholder base

Key financials		
IVA LISTED EURONEXT	Nasdaq	IVA NasdaqListed
ISIN code	FR0013233012 / US46	5124U1079
Market	Euronext Paris / Nasda	aq GM
Shares outstanding	52,477,188	
Market cap (April 4, 2024)	Euronext Paris: €173 n Nasdaq Global Market:	-
Cash position (as of December 31, 2023)	€35.9m (vs €88.4m as 31, 2022) ⁽¹⁾ Current expected cash runway 2024, including the EIB second drawn Jan. 18, 2024	vuntil early Q3
Revenues (as of December 31, 2023)	€17.5m compared to €	12.2m for 2022
R&D expenditures (as of December 31, 2023)	€110m compared to €6	0.5m in 2022

Shareholder base



Analyst coverage

Jefferies	L. Codrington / M. J. Yee	
Guggenheim	S. Fernandez	
Stifel	A. Samimy	
HC Wainwright	E. Arce	
Canaccord Genuity	E. Nash	
KBC	J. Mekhael	
Portzamparc	M. Kaabouni	
Gilbert Dupont	P.A. Desir	

⁽¹⁾ Cash position also includes: i. short-term deposits recorded in the category "other current assets" in the IFRS consolidated statement of financial position and are considered by the Company as liquid and easily available, ii. the long-term deposit has a two-year term accessible prior to the expiration of the term with a notice period of 31 days and is considered as liquid by the Company.

Lanifibranor: licensing and commercialization agreement in Greater China, Japan and South Korea



中國生物製藥有限公司 SINO BIOPHARMACEUTICAL LIMITED

Licensing agreement in Greater China

- Agreement with CTTQ an affiliate of Sino Biopharm one of the largest Chinese pharmaceutical groups listed in Hong Kong Exchange (HSI composite) with a market cap of c.US\$10bn⁽¹⁾ and c.US\$4bn of revenue⁽²⁾ and ranked top 40th pharma globally⁽³⁾
- \$17 million of non-dilutive payments received
- Up to \$290 million of clinical, regulatory and commercial milestone payments
- Tiered royalties from high single-digit to mid-teen double digits on net sales made during the first three years of commercialization and from low to mid-teen double digits starting from year four.
- CTTQ will bear all costs associated with the trials conducted in Greater China
- CTTQ to randomize patients into the NATiV3 Phase III clinical trial in mainland China



Licensing agreement in Japan / South Korea

- Licensing agreement with Hepalys Pharma, Inc. backed by Catalys Pacific, Mitsubishi UFJ Capital, DBJ Capital, and MEDIPAL Innovation Fund
- \$10M upfront payment
- Up to \$231M of clinical, regulatory and commercial milestone payments
- Tiered royalties from mid double digits to low twenties on net sales
- Inventiva owns a stake of Hepalys Pharma, Inc. and has an option to acquire all outstanding shares at a pre-agreed multiple of post-money valuation
- Right of first refusal in the event Hepalys receives an offer to sell the license or rights related to lanifibranor.
- Hepalys will bear all costs associated with the trials conducted in Japan and South Korea
- Development includes PK/PD Phase I studies and following phase I and NATiV3 results an independent pivotal Phase III study in Japan and South Korea

Inventiva eligible to more than 500M\$ of milestones plus sales royalties

(1) Information about Sino Biopharm, its business, operations and finances are based on third-party information and disclosures. Inventiva makes no representations regarding the accuracy of such information presented herein; (2) Market data as of Sept 2022; (3) Converted from RMB to USD

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Lanifibranor in Nonalcoholic Steatohepatitis (NASH)

Lanifibranor: a pan-PPAR agonist in phase III development in NASH

Moderate and balanced pan-PPAR agonist activity

PPARa

ΡΡΑRβ/δ | ΡΡΑRγ

LANIFIBRANOR

- Small molecule that activates all three PPAR isoforms in humans
- Differentiated chemical structure: not a fibrate or a TZD
- Once daily oral administration
- Positive Phase IIb trial topline results in NASH
- FAST Track (including in NASH patients with compensated cirrhosis) and Breakthrough Therapy designations granted by FDA
- IP: 19 families with last expiry in 2044
 - Composition of matter patent: LOE⁽¹⁾ August 2026 (5-year extension excluded)
 - Method of use patent: LOE⁽¹⁾ June 2035 (5-year extension excluded)

Pan-PPAR activity expected to ensure improved efficacy in MASH/NASH

METABOLISM	STEATOSIS	INFLAMMATION AND BALLOONING	FIBROSIS	VASCULAR
ΡΡΑΖα ΡΡΑΖδ ΡΡΑΖγ	ΡΡΑRγ	ΡΡΑRα ΡΡΑRδ ΡΡΑRγ	ΡΡΑΚδ ΡΡΑΚγ	ΡΡΑRα ΡΡΑRγ
 Insulin sensitivity HDLc Triglycerides 	 FA uptake FA catabolism Lipogenesis 	 NFkB-dependent gene activation Inflammasome Ballooning 	 Stellate cell proliferation and activation Collagen and fibronectin production 	 Portal pressure LSEC capillarization Intrahepatic vascular resistance
Corporate Presentation 2024		inventiva		Property of Inventiva 10

Lanifibranor is a differentiated pan-PPAR agonist with moderate and well balanced activity on the three PPAR isoforms

LANIFIBRANOR

Differentiated oral small molecule ...



- Small molecule that activates all three PPAR isoforms
- Differentiated chemical structure with once daily oral administration
- Offered in two dosage forms (800 mg, 1200 mg)

\dots that binds differently than glitazone to PPARy



Induces different coactivator recruitment^{^^}

Moderate and balanced pan-PPAR agonist activity



Compound	PPARα EC50 (nM)	ΡΡΑ Βδ ΕC50 (nM)	PPARγ EC50 (nM)	
Lanifibranor*	1630	850	230	
Fenofibrate	2400	-	-	
Pioglitazone	-	-	263	
Rosiglitazone	-	-	13	
Elafibranor**	10	100	-	
Seladelpar^	-	2	-	

Source: * Company data ** Hanf R et al, Diabetes & Vascular Dis Res 2014 ^ Cymabay company presentation ^^ J Med Chem. 2018 Feb 15. doi: 10.1021/acs.jmedchem.7b01285

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Adverse events and toxicity previously seen in other single and dual PPAR agonists have not been observed with lanifibranor

SAF	
DAI	

Organ	Isoforms activated	Reported PPAR side effects	lanifibranor effects
HEART	PPARy	Fluid retentionCardiac hypertrophy	
SKELETAL MUSCLE	ΡΡΑΖα	Myofiber degeneration	ΝΟΤ
RIDNEY	ΡΡΑΖα	> 50% increases in creatinine, degenerative changes in renal tubules	OBSERVED
	PPARy	Proliferative changes in bladder epithelium	

Adverse events and toxicity of single / dual PPAR agonists not observed in primate and rodent studies

FAVOURABLE TOLERABILITY PROFILE in — a 12-month monkey study …		No adverse clinical signs observed at any dose-level tested No effects on body and heart weight, no haemodilution or creatinine increase Electrocardiography and clinical pathology investigations did not reveal any undesirable effects		
and in two-year CARCINOGENITY STUDIES performed in rat and mice	•	Rat: no observed neoplastic change or increase in tumor types commonly associated with single PPAR γ and dual PPAR α/γ agonists (liver, adipose, bladder, renal and skin) Mice: no observed neoplastic changes of human relevance		
Confirmation by FDA that the non-clinical toxicology package is complete and acceptable to support NDA filing in NASH				

Source: Company data

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Lanifibranor: comprehensive impact on the histology and biology of NASH



GLUCOSE METABOLISM MARKERS

Improves insulin sensitivity and glycemic control in patients with or without diabetes

Treatment with lanifibranor decreases the ratio of visceral abdominal fat to subcutaneous fat, reflecting a shift from pro-inflammatory visceral fat towards metabolically healthy adipose tissue

Fasting glucose Fasting insulin HbA1c



Insulin resistance Hepatic and muscle insulin resistance

CARDIOVASCULAR RISK MARKERS

Improves markers of cardiovascular risk and lipid metabolism

HDL-C
 Triglycerides levels
 LDL-cholesterol level
 Hs-CRP



Improves markers of cardiometabolic health independently of weight gain which has been shown to be metabolically healthy Increases adiponectin known to regulate glucose levels, lipid metabolism and insulin sensitivity through its anti-inflammatory, antifibrotic and antioxidant effects

(1) Proton magnetic resonance spectroscopy Corporate Presentation | 2024

The Phase IIb NATIVE trial evaluated 800 mg and 1200 mg oncedaily lanifibranor versus placebo in 247 patients





Patient population	# patients	Definition
Safety / Intention-to-Treat (ITT)	247	Patients randomized having received at least one dose of lanifibranor/placebo
Per Protocol (PP)	194	Patients with paired biopsies and without deviation impacting efficacy results

- Main inclusion criteria: patients with biopsy-proven NASH confirmed by central reader having Steatosis-Activity-Fibrosis (SAF) scores of 1-3 for steatosis, 3-4 for activity, and <4 for fibrosis</p>
- Results published in the New England Journal of Medicine⁽¹⁾:

The NEW ENGLAND JOURNAL of MEDICINE established in 1812 OCTOBER 21, 2021 andomized. Controlled Trial of t VOL. 385 NO. 17

A Randomized, Controlled Trial of the Pan-PPAR Agonist Lanifibranor in NASH

(1) https://www.nejm.org/doi/full/10.1056/NEJMoa2036205

The majority of patients successfully completed the 24-week treatment



Note: * And adverse event as secondary reason

Patient population included 58% of female and 42% of patients with T2D

PHASE IIb DESIGN BASELINE				
Parameters (unit) n (%) or mean ± SD	Placebo - N = 81	lanifibranor 800 mg/day N = 83	lanifibranor 1200 mg/day N = 83	Overall - N = 247
Demographics				
Female	41 (51%)	54 (65%)	49 (59%)	144 (58%)
Age (years)	53.4 ± 13.1	55.0 ± 10.4	52.2 ± 13.8	53.6 ± 12.5
White	74 (91%)	80 (96%)	78 (94%)	232 (94%)
Weight (kg)	95.1 ± 17.3	91.6 ± 19.3	93.0 ± 19.9	93.2 ± 18.9
Body Mass Index (kg/m²)	$\textbf{32.8} \pm \textbf{5.1}$	32.5 ± 5.5	33.3 ± 5.5	$\textbf{32.9} \pm \textbf{5.4}$
Type 2 diabetes	35 (43%)	33 (40%)	35 (42%)	103 (42%)
Liver biopsy characteristics				
SAF Activity score (inflammation + ballooning)	3.3 ± 0.5	3.2 ± 0.5	3.3 ± 0.5	3.3 ± 0.5
NAFLD Activity Score (NAS) ≥6	56 (69.1%)	63 (75.9%)	61 (73.5%)	180 (72.9%)
Fibrosis stage F2/F3	57 (70.4%)	68 (81.9%)	63 (75.9%)	188 (76.1%)



Several liver tests and markers of lipid and glucose metabolism were recorded

PHASE IIb DESIGN BASELINE								
Parameters (unit) mean ± SD	Placebo - N = 81	lanifibranor 800 mg/day N = 83	lanifibranor 1200 mg/day N = 83					
Liver enzymes								
Alanine aminotransferase, ALT (UI/L)	56.9 ± 31.6	64.1 ± 41.4	63.6 ± 43.4					
Aspartate aminotransferase, AST (UI/L)	43.3 ± 24.1	53.9 ± 43.4	43.9 ± 24.8					
Gamma glutamyl transferase, GGT (UI/L)	67.9 ± 80.4	101.6 ± 146.1	67.1 ± 93.1					
Plasma lipid levels								
HDL-Cholesterol (mmol/L)	1.2 ± 0.3	1.3 ± 0.3	1.2 ± 0.3					
Triglycerides (mmol/L)	2.0 ± 0.8	1.9 ± 0.9	2.0 ± 0.9					
Glucose metabolism for patients with T2D (n= 103)								
Fasting Glucose (mmol/L)	6.9 ± 2.0	7.3 ± 2.2	6.6 ±1.2					
HbA1c (%)	6.5 ± 0.7	6.7 ± 0.8	6.6 ± 0.7					
Insulin (pmol/L)	$\textbf{222.7} \pm \textbf{186.5}$	246.3 ± 213.4	278.5 ± 233.5					

Lanifibranor is the first candidate to achieve statistically significant results on the key Phase III FDA and EMA primary endpoints



Statistical significance was also demonstrated for the main key histological endpoints in patients with F2-F3 fibrosis stage

* Resolution of NASH and no worsening of fibrosis at week 24: NAS-I = 0 or 1 (NAS-Inflammation), NAS-B = 0 (NAS-Ballooning) and no worsening of NAS-F from baseline; ** Improvement of liver fibrosis \geq 1 stage and no worsening of NASH at week 24; *** Resolution of NASH and improvement of fibrosis at week 24: NAS-I = 0 or 1, NAS-B = 0 and an improvement of NAS-F \geq 1 stage

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No head-to-head clinical trials have been conducted; results obtained from different trials, with different designs, endpoints and patient populations. Results may not be comparable. Source: lanifibranor native results; Efruxifermin Safety and efficacy of once-weekly efruxifermin versus placebo in non-alcoholic steatohepatitis (HARMONY): a multicentre, randomised, double-blind, placebo-controlled, phase 2b trial. Lancet Gastroenterology October 2023; Semaglutide A Placebo-Controlled Trial of Subcutaneous Semaglutide in Nonalcoholic Steatohepatitis; Newsome et al. NEJM 2021; 384:1113-1124.; Resmetirom MAESTRO NASH top-line results webcast Dec. 19 2022, pg 10 <u>Phase 3 development of</u>

October 2023 ; Semaglutide A Placebo-Controlled Trial of Subcutaneous Semaglutide in Nonalcoholic Steatohepatitis; Newsome et al. NEJM 2021; 384:1113-1124.; Resmetirom MAESTRO NASH top-line results webcast Dec. 19 2022, pg 10 <u>Phase 3 development of resmetirom</u>, a liver-directed thyroid hormone receptor (THR)-β agonist for the treatment of patients with NASH and significant liver fibrosis (madrigalpharma.com) and EASL 2023 presentation pg. 8; Efruxifermin EASL 2023 presentation pg. 8; Corporate presentation of March 2024 pg 22 https://ir.akerotx.com/static-files/c76e5581-39ab-4d46-a6c7-b5893f7a2210

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NASH competitive landscape ≥1 Stage Fibrosis improvement and no worsening of NASH



No head-to-head clinical trials have been conducted; results obtained from different trials, with different designs, endpoints and patient populations. Results may not be comparable.

Source: lanifibranor native results;; resmetirom MAESTRO NASH top-line results webcast Dec. 19 2022, pg 10 <u>Phase 3 development of resmetirom, a liver-directed thyroid hormone receptor (THR)-ß agonist for the treatment of patients with NASH and significant liver fibrosis (madrigalpharma.com); resmetirom : Harrison et al, Lancet 2019; S0140-6736(19) 32517-6 Efruxifermin Safety and efficacy of once-weekly efruxifermin versus placebo in non-alcoholic steatohepatitis (HARMONY): a multicentre, randomised, double-blind, placebo-controlled, phase 2b trial. Lancet Gastroenterology October 2023; corporate presentation of March 2024 pg15 <u>https://ir.akerotx.com/static-files/c76e5581-39ab-4d46-a6c7-b5893f7a2210</u>; Semaglutide A Placebo-Controlled Trial of Subcutaneous Semaglutide in Nonalcoholic Steatohepatitis; Newsome et al. NEJM 2021; 384:1113-1124 ; Pegozafermin, 89Bio Phase IIb ENLIVEN Topline Results presentation <u>Title Slide (89bio.com)</u></u>

NASH competitive landscape NASH resolution and no worsening of fibrosis



No head-to-head clinical trials have been conducted; results obtained from different trials, with different designs, endpoints and patient populations. Results may not be comparable.

Source: lanifibranor native results;; resmetirom MAESTRO NASH top-line results webcast Dec. 19 2022, pg 10 <u>Phase 3 development of resmetirom, a liver-directed thyroid hormone receptor (THR)-ß agonist for the treatment of patients with NASH and significant liver fibrosis (madrigalpharma.com); resmetirom : Harrison et al, Lancet 2019; S0140-6736(19) 32517-6 Efruxifermin Safety and efficacy of once-weekly efruxifermin versus placebo in non-alcoholic steatohepatitis (HARMONY): a multicentre, randomised, double-blind, placebo-controlled, phase 2b trial. Lancet Gastroenterology October 2023, corporate presentation of March 2024 pg21 <u>https://ir.akerotx.com/static-files/c76e5581-39ab-4d46-a6c7-b5893f7a2210;</u> Semaglutide A Placebo-Controlled Trial of Subcutaneous Semaglutide in Nonalcoholic Steatohepatitis; Newsome et al. NEJM 2021; 384:1113-1124 ; Pegozafermin, 89Bio Phase IIb ENLIVEN Topline Results presentation <u>Title Slide (89bio.com)</u></u>

A statistically significant decrease in liver enzymes was observed



Other secondary endpoints in ITT (N = 247)

Absolute change from baseline in ALT



Absolute change from baseline in AST







A statistically significant decrease of ALT, AST and GGT in both lanifibranor dose groups observed after 4 weeks

A statistically significant change in HDL-cholesterol and triglycerides was seen, without a change in LDL-cholesterol

PHASE IIb

EFFICACY OTHER

Other secondary endpoints in ITT (N = 247)

* p<0.01 **p<0.001



No change in LDL-cholesterol

In patients with NASH and T2D, statistically significant reductions of fasting glucose and insulin, HbA1c were observed

PHASE IIb

SECONDARY ENDPOINTS

EFFICACY OTHER

Secondary endpoints in patients with NASH and T2D (N = 103)



Lanifibranor leads to significant improvements in hepatic and muscular insulin sensitivity

Data from the clinical study conducted by Dr. Kenneth Cusi from the University of Florida, evaluating lanifibranor (800mg/day) in patients with NAFLD and type 2 diabetes mellitus (T2D) for 24 weeks



^a ANCOVA.

Data from NATIVE clinical study evaluating lanifibranor (800mg/day and 1200mg/day) in patients with NASH for 24 weeks

	Median relative change (%)		Placebo	lanifibranor (Two doses pooled)	Pvalue
OUTCOME MEASURES	Fibrosis	Pro-C3	(4.1%)	(13.9%)	p=0.005*
		Pro-C3 >14 at baseline ⁽¹⁾	(12.8%)	(20.5%)	p=0.017*
ME ME.		Ratio TIMP-1/MMP-2	(4.6%)	(22.5%)	p < 0.001*
OTHER OUTCO	Apoptosis	CK18-M30	0.5%	(41.1%)	p < 0.001*
	Inflammation	Ferritin	(9.1%)	(29.4%)	p < 0.001*
		hs-CRP	13.0%	(35.5%)	p < 0.001*

(1) Level where it is estimated that fibrogenesis is active and corresponding to F2/F3 patients

FAS (Full Analysis Set) population with available data at baseline and at week 24

* Statistically significant

Lanifibranor significantly reduces hepatic steatosis measured by MRI-PDFF and MR-spectroscopy

Data from the Legend clinical study evaluating lanifibranor (800mg/day) in combination with empagliflozin in patients with NASH and poorly controlled Type 2 Diabetes (T2D) for 24 weeks



Baseline 17.1-19.7%

*p≤0.05, versus placebo (ANCOVA – Analysis of Covariance)

Six patients were not considered in the FAS because no MRI-PDFF values available at Week 24:

- 5 patients under placebo who prematurely stopped before Week 24
- 1 patient under lani+empa who significantly modified his/her diet (intercurrent event) before Week 24

Data from the clinical study conducted by Dr. Kenneth Cusi from the University of Florida, evaluating lanifibranor (800mg/day) in patients with NAFLD and type 2 diabetes mellitus (T2D) for 24 weeks



- ▶ 65% of patients achieved liver fat reduction ≥30% vs 22% under placebo
- 25% of patients achieved NAFLD resolutions vs 0% under placebo

^a P-value from an Analysis of Covariance (ANCOVA) using the relative change from baseline to week 24 as the response, the treatment as covariate as well as the baseline of IHTG. In the FAS, missing data at Week 24 were imputed by baseline data.

Treatments effects on liver fat reduction: competitive landscape



No head-to-head clinical trials have been conducted; results obtained from different trials, with different designs, endpoints and patient populations. Results may not be comparable.

* Results reported among completers

**Reductions reported only for subset of patients with liver fat content ≥10 at baseline

Efruxifermin – Akero's Phase 2b Harmony Study Results presentation (sept. 2022), Pegozafermin - 89Bio' Corporate Presentation (May 2023); Resmetirom – Madrigal's corporate presentation (May 2023); Semaglutide - Flint A, Andersen G, Hockings P, Johansson L, Morsing A, Sundby Palle M, Vogl T, Loomba R, Plum-Mörschel L. Randomised clinical trial: semaglutide versus placebo reduced liver steatosis but not liver stiffness in subjects with non-alcoholic fatty liver disease assessed by magnetic resonance imaging. Aliment Pharmacol Ther. 2021 Nov;54(9):1150-1161. doi: 10.1111/apt.16608. Epub 2021 Sep 27. PMID: 34570916; PMCID: PMC9292692.

Lanifibranor alone and in combination with empaglifozin improves markers of inflammation and fibrosis measured by cT1

Data from the clinical study evaluating lanifibranor (800mg/day) in combination with empagliflozin in patients with NASH and poorly controlled Type 2 Diabetes (T2D) for 24 weeks

Changes in Inflammation and Fibrosis measured by cT1, N=25



LS Mean Absolute change (ms) from Baseline to Week 24

*p=0.06 both, versus placebo (ANCOVA)

Seven patients were not considered in the FAS because of no cT1 values available at Week 24:

- 5 patients under placebo who prematurely stopped before Week 24
- 1 patient under placebo with a missing value at Week 24
- 1 patient under lani+empa who significantly modified his/her diet (intercurrent event) before Week 24

cT1 Absolute Reduction of >80 ms Percentage of responders at Week 24



Lanifibranor has a favourable safety profile



PHASE IIb SAFETY OVERALL			
N (%) patients reporting Adverse Event (AE)	Placebo (N = 81)	800 mg (N = 83)	1200 mg (N = 83)
Any Treatment-Emergent AE (TEAE)	50 (61.7%)	59 (71.1%)	62 (74.7%)
Drug-related TEAE	19 (23.5%)	25 (30.1%)	23 (27.7%)
Any TEAE leading to drug withdrawal	3 (3.7%)	4 (4.8%)	3 (3.6%)
Drug-related TEAE leading to drug withdrawal	2 (2.5%)	1 (1.2%) ⁽¹⁾	2 (2.4%) ⁽²⁾
Any Serious TEAE	3 (3.7%)	3 (3.6%)	7 (8.4%)
Drug-related Serious TEAE	2 (2.5%) ⁽³⁾		
			Ecoura of poyt a

(1) One patient with moderate diarrhea; (2) One patient with mild cardiac failure; one patient with mild diarrhea, abdominal pain, dizziness; (3) 2 SUSARs (placebo arm): one patient with mild cardiac failure; one patient with moderate urticaria

Focus of next slide

Consistent with known insulin sensitizing pharmacology, a mean weight increase from baseline of 2.4 kg (2.6%) at the 800 mg/day dose and 2.7 kg (3.1%) at the 1200 mg/day dose was observed.

	Placebo (N = 81)	800 mg (N = 83)	1200 mg (N = 81)
Peripheral edema	2 (2.5%)	5 (6.0%)	7* (8.4%)
Drug-related peripheral edema	-	2 (2.4%)	2 (2.4%)

Peripheral edema (bilateral ankle edema): usually mild, in most cases no treatment was required, a few patients received diuretics. 4 cases were considered study drug related by the investigator (2 at 800 and 1200 mg each). One case of severe intensity, which resolved by stopping treatment (lanifibranor 1200mg) for 12 days, without reoccurrence when the study treatment was resumed. All were female patients * One AE of severe intensity

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A limited number of serious TEAEs occurred



Patients reporting treatment-emergent Serious AE (SAE); N (%)	Placebo (N = 81)	800 mg (N = 83)	1200 mg (N = 83)
Total	3 (3.7%)	3 (3.6%)	7 (8.4%)
Treatment-Emergent Serious AE linked to biopsy procedu	re		
Post-procedural haematoma/haemorrhage	-	1 (1.2%)	1 (1.2%)
Post-procedural pain	-	-	1 (1.2%)
Pneumobilia (post-procedural)	-	-	1 (1.2%)
Other Treatment-Emergent Serious AE			
Wrist fracture	1 (1.2%)	-	-
Angina unstable	-	-	1 (1.2%)
Cardiac failure	1 (1.2%)	-	-
Gastroenteritis	-	-	1 (1.2%)
Pyelonephritis	-	-	1 (1.2%)
Pancreatitis	-	1 (1.2%)	-
Undifferentiated connective tissue disease	-	1 (1.2%)	-
Urticaria	1 (1.2%)	-	-
Foot operation	-	-	1 (1.2%)

Phase II results have demonstrated modest weight increase with no impact on efficacy

- Consistent with known insulin-sensitizing pharmacology, a mean weight increase from baseline of 2.4 kg (2.6%) at the 800 mg/day dose and 2.7 kg (3.1%) at the 1200 mg/day dose was observed
- According to a six-month study with pioglitazone in patients * with NASH body weight gain is likely attributed to an increase in adipose tissue and not water retention
- Based on a 52-week lanifibranor trial in systemic sclerosis (SSc) patient weight gain is expected to reach a maximum by week 24

SSc lanifibranor study: weight (kg) relative change from baseline over 52 weeks (Observed cases under treatment – FAS population)



Note: * Pioglitazone treatment increases whole body fat but not total body water in patients with non-alcoholiv steatohepatitis ; Balas, Belfort, Harrison et al. ; Journal of Hepatology 47 (2007) 565-570



Weight changes in NATIVE trial: approximately 33% of patients on lanifibranor show a weight increase of more than 5%



Weight changes at end of treatment (Week 24) in patients treated with lanifibranor versus placebo



Source: MP. Cooreman, Lanifibranor improves markers of cardio-metabolic health in NASH patients independent of weight change – EASL 2022

Metabolic profile improves in patients treated with lanifibranor, independently of weight changes, but worsen in placebo treated patients gaining weight (I/II)



Source: MP. Cooreman, Lanifibranor improves markers of cardio-metabolic health in NASH patients independent of weight change – EASL 2022

Metabolic profile improves in patients treated with lanifibranor, independently of weight changes, but worsen in placebo treated patients gaining weight (II/II)



Effect on weight when combining lanifibranor with empagliflozine





- 1 patient under lani+empa with missing data at Week 24, and 1 patient under lani+empa who significantly

At Week 24, 7 patients without weight values available :

5 patients under placebo who prematurely stopped before Week 24

modified his/her diet (intercurrent event) before Week 24.

Ratio VAT/SAT, N=19 LS Mean Relative change (%) from Baseline to Week 24 11 10 5 0 -5 -5* -10 -15 -17 ** -20 Lani + Empa Placebo Lani n= 4 n= 8 n= 7

SAT=Subcutaneous Adipose Tissue, VAT=Visceral Adipose Tissue * p=0.08, **p<0.01, versus placebo (ANCOVA)

Thirteen patients were not considered in the FAS because of no VAT/SAT values available at Week 24:

- 5 patients under placebo who prematurely stopped before Week 24

- 1 patient under placebo / 4 patients under lanifibranor / 3 patients under lani+empa with missing values at Week 24

The combination of empagliflozin and lanifibranor addresses the weight gain observed in some patients treated with lanifibranor alone

Lanifibranor alone and in combination with empagliflozin leads to a shift towards metabolically healthy adipose tissue
Phase III NATiV3 should, if positive, allow to file for accelerated approval





- By diabetic status
- By fibrosis stage F1-F3/F4

Principal investigators: Dr. S. Francque / Dr. A. Sanyal for the main cohort and Dr. S. Harrison for the exploratory cohort

Primary endpoint: Composite endpoint of patients having both NASH resolution and one stage fibrosis improvement

Key secondary endpoints: NASH resolution and no worsening of fibrosis / Fibrosis improvement and no worsening of NASH

GLP1: Patients under a stable dose of GLP1-RA for at least 3 months prior to screening can be incuded

Statistical powering: 90% considered for sample size calculations

Central biopsy reading: Tie breaker approach by three expert pathologists

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Over 400 sites and 24 countries involved in NATIV3



PHASE III

SITE SELECTION

DESIGN



NATIV3

- 478 sites activated in 24 countries (as of April 1, 2024)
- 914 randomized patients: 731 in the main cohort and 183 in the exploratory cohort (prior to the voluntary pause)
- Target to achieve LPFV H1 2024
- ► Topline data expected H1 2026

Opportunity for lanifibranor

Lanifibranor shines on the key decision drivers for payers and prescribers



Payers

- Improvement in fibrosis will be the key driver of P&TC decisions in MASH
- Payers see lanifibranor as stronger than resmetirom and semaglutide on fibrosis improvement





Top 6 Key attributes (n = 95)

Source: US prescriber survey, February 2024 conducted in 45 hepatologists, 25 gastroenterologists, 25 endocrinologists in the United States in Q1 2024. Only assets in Phase III clinical trial in NASH/MASH at the time of the survey were included; US Payer Advisory Board, March 2023

Prescribers expect lanifibranor to be significantly more beneficial than the other oral option, resmetirom, for both pre-diabetic and diabetic patients with MASH



Lanifibranor clearly well positioned in patients with T2D and NASH/MASH, a population more present in patients with F2/F3 fibrosis and with a faster progressing form of fibrosis

Source: US prescriber survey, February 2024 conducted in 45 hepatologists, 25 gastroenterologists, 25 endocrinologists in the United States in Q1 2024. Only assets in Phase III clinical trial in NASH/MASH at the time of the survey were included.

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Prescribers expect GLP-1 + lanifibranor to be significantly more beneficial than GLP-1 alone; suggests a perception of synergy, with lanifibranor enhancing GLP-1



Lanifibranor could address the need in patients treated with GLP-1 to reduce fibrosis with an oral treatment and without the GI side effects present in the GLP-1 and FGF-21 class

Source: US prescriber survey, February 2024 conducted in 45 hepatologists, 25 gastroenterologists, 25 endocrinologists in the United States in Q1 2024. Only assets in Phase III clinical trial in NASH/MASH at the time of the survey were included.

Payers see a 2-3 kg metabolically healthy weight gain side effect as a prescriber/patient issue; prescribers are far more concerned about other side effects



Payers

Payers see lanifibranor as safe for chronic use and any associated moderate weight gain is seen as manageable with lifestyle choices or weight loss agents.

"If the message is that you'll gain 3 or 4 lbs but you'll feel better, and you explain the difference between healthy and unhealthy weight, you can get through that. If someone is 200 pounds and goes up to 205 pounds, I don't think they're going to notice it...."

Prescribers

- A majority of HEPs and ~ half of GEs would not hesitate to prescribe a new MASH drug that causes 2-3 kg weight gain
 - 72% of prescribers can manage a moderate weight gain with diet, exercise and counselling.
 - 78% of prescribers agree that "Combining lanifibranor with an SGLT2 or GLP-1 is an opportunity to maintain effectiveness in MASH while mitigating weight gain."
 - 73% of prescribers agree that the benefits of lanifibranor outweigh the moderate weight gain.
 - Prescribers see other SEs as bigger drawbacks



The importance of adherence to treatment and convenience of administration favors lanifibranor

- 80% of prescribers see low discontinuation rate as critical, very critical or absolute necessity
- 80% of prescribers rate oral administration as a key benefit

Source: US prescriber survey, February 2024 conducted in 45 hepatologists, 25 gastroenterologists, 25 endocrinologists in the United States in Q1 2024. Only assets in Phase III clinical trial in NASH/MASH at the time of the survey were included; US Payer Advisory Board, March 2023

Opportunity for lanifibranor based on current clinical program (F2/F3)



Source: Estes C, Razavi H, Loomba R, Younossi Z, Sanyal AJ. Modeling the epidemic of nonalcoholic fatty liver disease demonstrates an exponential increase in burden of disease. Hepatology 2018;67:123-133; US prescriber survey, February 2024 conducted in 45 hepatologists, 25 gastroenterologists, 25 endocrinologists in the United States in Q1 2024. Only assets in Phase III clinical trial in NASH/MASH at the time of the survey were included; US Payer Advisory Board, March 2023

Upcoming catalysts

Catalysts



Odiparcil

Review potential options to further develop odiparcil for the treatment of MPS VI, which may include pursuing a partnership

Contacts

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Lanifibranor : back-ups slides

Phase I and Phase IIa clinical trials* in type 2 diabetes (T2D) patients: beneficial changes in key metabolic markers

PHASE I AND IIa

Placebo

Lanifibranor metabolic markers in patients with T2D

1400 mg

lanifibranor



change from baseline **40** p<0.05 30p<0.05 20p=0.13Percent 10 400 mg 800 mg 1400 mg Placebo lanifibranor lanifibranor lanifibranor

HDL Cholesterol (PPAR α/δ)^

Triglycerides (PPARα/δ) ^^



Phase I and IIa* clinical findings support the favorable tolerability of lanifibranor

Phase I trials: > 200 healthy volunteers

lanifibranor lanifibranor

Phase IIa trial with 47 T2D patients

400 mg

Phase IIb: > 250 patients treated for 24 or 48 weeks

800 mg

- Good overall tolerability and no major safety findings
- No increases of creatinine, LFTs, or CPK
- No changes in blood pressure, no signal of fluid overload or haemodilution
- No clinically relevant weight gain

Thorough QT/QTc study demonstrates no impact of the drug on QT intervals

- Study carried out in 2020 and 2021 to prepare the NDA package
- A randomized, double-blind, double-dummy, placebo, positive-controlled (400mg of moxifloxacin) and multiple-dose (1200mg and 2400mg as the supratherapeutic dose) cardiac safety study to evaluate the effect of lanifibranor on the QT interval in healthy adult subjects
- At doses of 1200 mg and 2400 mg, lanifibranor has no impact on QT intervals

Note: * Conducted by Abbott; ** Adiponectin is associated with PPAR_γ activation; ^ HDL-C is associated with PPAR_α and d activation; ^ Triglycerides are associated with PPAR_α and δ activation Source: Company data

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247 patients were randomised across 71 sites worldwide, with the majority of patients based in Europe



16 countries worldwide (number of sites having randomized at least 1 patient)

- Europe: Austria (1), Belgium (5), Bulgaria (5), Czech Republic (3), France (13), Germany (5), Italy (4), Poland (3), Slovenia (1), Spain (4), Switzerland (2), United Kingdom (3)
- North America: United States (12), Canada (4)
- Australia (5)
- Mauritius (1)

Lanifibranor demonstrated statistical significance on all histological endpoints in both ITT and PP populations



* Response is defined as a decrease from baseline to week 24 of at least 2 points of the SAF Activity score (SAF-A) with no worsening of the NAS Fibrosis score (NAS-F). No worsening means that score remains stable or decreases ; ** Resolution of NASH and no worsening of fibrosis at week 24: NAS-I = 0 or 1 (NAS-Inflammation), NAS-B = 0 (NAS-Ballooning) and no worsening of NAS-F from baseline; *** Improvement of liver fibrosis ≥ 1 stage and no worsening of NASH at week 24; ^ Resolution of NASH and improvement of fibrosis at week 24: NAS-I = 0 or 1, NAS-B = 0 or 1, NAS-B = 0 and an improvement of NAS-F ≥ 1 stage; ^ NAS score is a commonly accepted, semi-quantitative evaluation of biopsy results that assesses the severity of steatosis, inflammation and ballooning in the liver.

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Statistical significance was also demonstrated for the main key histological endpoints in patients with F2-F3 fibrosis stage



Consistent response in diabetic and non-diabetic patients

* Resolution of NASH and no worsening of fibrosis at week 24: NAS-I = 0 or 1 (NAS-Inflammation), NAS-B = 0 (NAS-Ballooning) and no worsening of NAS-F from baseline; ** Improvement of liver fibrosis ≥ 1 stage and no worsening of NASH at week 24; *** Resolution of NASH and improvement of fibrosis at week 24: NAS-I = 0 or 1, NAS-B = 0 and an improvement of NAS-F ≥ 1 stage

Additional analyses of NATIVE results: lanifibranor improved markers of cardiometabolic health

Clinical data demonstrating a robust beneficial effect on markers of cardiometabolic health AASLD November 13-16, 2020 Correlation between severity of hepatic steatosis and markers of cardiometabolic health, and effect of lanifibranor therapy in patients with non-**The Liver Meeting** cirrhotic NASH. Lanifibranor improves markers of cardiometabolic health in patients with NASH and T2D, correlated with responses in adiponectin levels. EASL 2021 Lanifibranor improved markers of glucose metabolism in prediabetic patients. The majority of patients who were prediabetic at study entry and Liver Congress Pac received lanifibranor had normal fasting glucose levels at the end of therapy. Lanifibranor reduced hepatic steatosis, quantified by ultrasound-based imaging (Fibroscan CAP⁽¹⁾). AASLD Nov. 12-15, 2021 Glycemic control correlates with NASH severity. The improvement of metabolic markers of NASH and hepatic steatosis with lanifibranor treatment is The Liver consistent with its beneficial effect on glycemic control. Meeting > The beneficial effects of lanifibranor on markers of cardiometabolic health were the same in patients with stable weight as in patients with weight increase. Lanifibranor reverses insulin resistance and improves glucose and lipid metabolism in patients with T2D and MASLD. Lanifibranor improves liver histology and markers of cardiometabolic health in patients with NASH independent of PNPLA3 genotype: a retrospective analysis of the NATIVE study. > Lanifibranor-associated adiponectin increase correlates with improvement of histological and serum markers of NASH severity both in terms of JUNE 2022 NEW DATES activity and fibrosis. Clinical data on predictive markers – non-invasive and histological evaluations Early aminotransferase improvement in the phase 2b NATIVE study is predictive of response pattern of liver histology as well as hepatic and AASLD Nov. 4-8, 2022 cardiometabolic health markers at the end of treatment in patients with non-cirrhotic NASH. The Liver Meeting Following treatment with lanifibranor 'NASH resolution' responders were significantly more likely to also be 'fibrosis improvers' than non-responders. ▶ Lanifibranor treatment improved the FibroScan-aspartate aminotransferase (FastTM) score, a promising non-invasive test (NIT) for active NASH with significant fibrosis. EASL'CONC > Application of stringent statistical methods identified non-invasive markers predictive of histological response with Lanifibranor therapy. Lanifibranor therapy led to a reduction in LSEC⁽²⁾ capillarization, measured by CD34 immunostaining. Nonclinical data Lanifibranor improves increased portal pressure, endothelial dysfunction and liver histology in a rat model of early NAFLD. AASLD Nov. 10-14, 2023 Lanifibranor decreases portal pressure in models of both hepatic and prehepatic portal hypertension. The Liver Unraveling the individual contributions of the PPAR isotypes to the pan-PPAR agonist Lanifibranor induced improvements of the vascular alterations Meetina and liver histology in a rat model of early NAFLD. > Lanifibranor improved NASH, fibrosis and diastolic dysfunction in a hamster model of diet-induced NASH and diastolic dysfunction.

(1) CAP: Controlled Attenuation Parameter (2) *Liver Sinusoidal Endothelial Cell*Corporate Presentation | 2024

Phase III NATiV3 clinical trial confirmatory trial: anticipated expected design to support broader "full approval"

PHASE III

OVERVIEW

Anticipated event driven trial in patients with NASH compensated cirrhosis



KEY ENDPOINTS (non-exhaustive)

- Based on time to first clinical event on c.800 patients
 - all cause mortality
 - hepatic decompensation events
 - hepatic encephalopathy
 - variceal bleeding or progression to varices that require prophylactic treatment
 - new onset ascites requiring treatment
 - MELD score ≥15
 - liver transplantation

TRIAL END DATE

Trial expected to last up to 3 years

Lanifibranor is designed to address all key features of NASH

	ORAL		INJECTABLE		
	Lanifibranor (pan-PPAR) inventiva	Resmetirom (THR-β)	Efruxifermin (FGF) akero	Pegozafermin (FGF) 89bio	Semaglutide (GLP-1)
STATUS	Phase III	Phase III	Phase III	Phase III	Phase III
ROUTE OF ADMINISTRATION	Oral	Oral	Injectable	Injectable	Injectable
INSULIN- RESISTANCE	\checkmark	×	\checkmark	\checkmark	\checkmark
STEATOSIS	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
NECRO- INFLAMMATION	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
FIBROSIS	\checkmark	\checkmark	\checkmark	\checkmark	×

Source: Newsome et al., 2020; Company websites

Lanifibranor clinical trial in patients with NAFLD and T2D

Lanifibranor clinical trial in patients with NAFLD and T2D

Objective of investigator-initiated trial: Establish safety, efficacy and mechanism of action of lanifibranor in patients with T2D and NAFLD. Specifically determine if lanifibranor decreases IHTG⁽¹⁾, improves hepatic insulin sensitivity, endogenous (hepatic) glucose production, gluconeogenesis and DNL⁽²⁾.

Patients with NAFLD and T2D

- Fasting plasma glucose: 100mg 250mg/dL
- **HbA1c**: 6.0% to 9.5%
- **Hepatic steatosis:** >10%



Primary endpoint: change in Intrahepatic triglycerides (IHTG)

Secondary endpoints:

- Proportion of responders reaching a decrease in IHTG from baseline ≥ 30% quantified by proton magnetic resonance spectroscopy (¹H-MRS)³
- ▶ Proportion of patients with NAFLD resolution (patients with IHTG \leq 5%) quantified by ¹H-MRS
- Change in hepatic and muscle insulin sensitivity and lipid metabolism
- Safety

⁽¹⁾ Intrahepatic triglycerides; (2) De-novo lipogenesis; (3) proton magnetic resonance spectroscopy



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missing data at Week 24 were imputed by baseline data.



responders

Treatments effects on liver fat reduction: competitive landscape



No head-to-head clinical trials have been conducted; results obtained from different trials, with different designs, endpoints and patient populations. Results may not be comparable.

* Results reported among completers

**Reductions reported only for subset of patients with liver fat content ≥10 at baseline

Efruxifermin – Akero's Phase 2b Harmony Study Results presentation (sept. 2022), Pegozafermin - 89Bio' Corporate Presentation (May 2023); Resmetirom – Madrigal's corporate presentation (May 2023); Semaglutide - Flint A, Andersen G, Hockings P, Johansson L, Morsing A, Sundby Palle M, Vogl T, Loomba R, Plum-Mörschel L. Randomised clinical trial: semaglutide versus placebo reduced liver steatosis but not liver stiffness in subjects with non-alcoholic fatty liver disease assessed by magnetic resonance imaging. Aliment Pharmacol Ther. 2021 Nov;54(9):1150-1161. doi: 10.1111/apt.16608. Epub 2021 Sep 27. PMID: 34570916; PMCID: PMC9292692.

Lanifibranor leads to significant improvements in hepatic and muscular insulin sensitivity



^a ANCOVA.

Lanifibranor treatment increases HDL and adiponectin levels



LS Mean absolute change from baseline to week

LS Mean absolute change from baseline to week 24 in adiponectin (completers N=28)



^a Mixed Model Repeated Measures (MMRM).

> No change in LDL-cholesterol

Key take-aways

- Lanifibranor met the primary efficacy endpoint by inducing a liver fat reduction of 44% in patients with T2D and NAFLD treated for 24 weeks.
 - 65% of patients with T2D and NAFLD treated with lanifibranor achieved a greater than 30% liver triglyceride reduction and 25% achieved NAFLD resolution after 24 weeks.
- Lanifibranor has a potent therapeutic effect on insulin sensitivity, and corresponding metabolic markers in patients with T2D and NAFLD
 - Potent effect as insulin sensitizer on hepatic and muscular insulin sensitivity
- Lanifibranor significantly improved adiponectin, which is known to regulate glucose levels, lipid metabolism, and insulin sensitivity through its anti-inflammatory, anti-fibrotic, and antioxidant effects
- Study confirms the favorable safety and tolerability profile of lanifibranor

Legend

Lanifibranor and SGLT2 Inhibitor mechanism of action and rationale for LEGEND





- Lanifibranor improves insulin sensitivity, lipid and glucose metabolism, inflammation, liver tissue injury (MASH activity) and fibrosis.
- Empagliflozin improves glycaemia, insulin sensitivity, has weight reducing and diuretic effects.
- The combination of lanifibranor + empagliflozin may
 - Add additional metabolic benefits
 - Address metabolically healthy weight gain observed in some patients on lanifibranor

Haas, Francque & Staels. Ann Rev Physiol 2016; Wanner & Marx. Diabetolgia 2018; Goossens G Obes Facts 2017; Pavlides et al. Journal of Hepatology 2016; Alexopoulos et al. Hepatology 2021



Lanifibranor in Combination with the SGLT2 Inhibitor empagliflozin in patients with NASH and Type 2 Diabetes LEGEND Study



Pre-specified interim analysis planned to be conducted when 50% of patients have completed the 24-week treatment period, or prematurely discontinued	Primary outcome measure: HbA1c reduction at Week 24	Secondary outcome measures: Insulin resistance Hepatic fat (MRI-PDFF) Liver injury markers (AST, ALT) Lipid markers	Other outcome measures: > Body weight > Body fat composition > Hepatic inflammation and fibrosis markers	Safety and tolerability
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* All but one patient discontinued after week 12.

One patient (Withdrawal by patient) discontinued before week 4.



Parameter (unit) [Normal ranges]	Placebo (n=10)	Lanifibranor (n=12)	Lanifibranor + Empagliflozin (n=10)	Total (n=32)
Age (years)	55.5	55.5	56.5	55.5
Sex (% female)	60	50	60	56
Weight (kg)	92.6	93.9	102.0	96.8
BMI (kg/m²)	33	33	37	35
HbA1c (%), [4.0 - 6.0]	7.7	7.7	8.2	7.8
Insulin (pmol/L) [18.1 - 172.9]	278	152	238	223
HOMA-IR	19.5	9.4	12.0	10.9
HDL-C (mmol/L) [F ≥ 0.91, M ≥ 0.78] / (mg/dL)	1.08 / 41.8	1.07 / 41.4	1.02 / 39.4	1.07 / 41.4
LDL-C (mmol/L) [F ≤ 4.14, M ≤ 3.89] / (mg/dL)	2.26 / 87.4	2.52 / 97.5	2.45 / 94.7	2.52 / 97.5
cT1 (ms)	942	949	921	931
Hepatic fat content (MRI-PDFF) (%)	17.1	18.5	19.7	18.8
ALT (U/L), [F ≤ 33, M ≤ 41]	33	53	54	39
AST (U/L), [F ≤ 32, M ≤ 40]	24	30	35	30
Adiponectin (ug/mL), [0.9 - 21.4]	2.6	3.1	4.0	3.0

Median values are presented for continuous parameters.

ALT: Alanine Aminotransferase, AST: Aspartate Aminotransferase, BMI: Body Mass Index, cT1: Corrected T1, F: Female, HDL-C: High density lipoprotein cholesterol, HOMA: Homeostasic model assessment, M: Male, MRI-PDFF: Magnetic resonance imaging-derived proton density fat fraction

Primary endpoint was met: statistically significant reductions in HbA1c at week 24 under lanifibranor alone and in combination with empaglifozin versus placebo



p<0.01, **p<0.001, versus placebo (Mixed Model Repeated Measure [MMRM]) Two patients were not considered in the FAS because not having post-treatment HbA1c values available:

- 1 patient under placebo who prematurely stopped before Week 4
- 1 patient under lanifibranor who received 'Metformin' as a rescue medication (intercurrent event) before Week 4 (Results were similar including this patient in a sensitivity analysis).

Completers, N=24 Percentage of responders at Week 24



Eight patients were not considered in the Completers set:

HbA1c < 6.5%

- 5 patients under placebo who prematurely stopped before Week 24
- 1 patient under lanifibranor who received 'Metformin' as a rescue medication (intercurrent event) before Week 4
- 1 patient under lani+empa with missing data at Week 24, and 1 patient under lani+empa who significantly modified his/her diet (intercurrent event) before Week 24.

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HbA1c absolute decrease ≥1%

Lanifibranor improves insulin sensitivity which is further improved in combination with empagliflozin



Insulin - FAS, N=30 LS Mean Absolute Change from Baseline to Week 24 (pmol/L)



*p<0.05, versus placebo (MMRM), † p<0.05, versus baseline (MMRM)

Two patients were not considered in the FAS because not having post-treatment insulin values available:

- 1 patient under placebo who prematurely stopped before Week 4
- 1 patient under lanifibranor who received 'Metformin' as a rescue medication (intercurrent event) before Week 4

HOMA-IR - FAS, N=30 LS Mean Relative change (%) from Baseline to Week 24



*p<0.05, **p<0.01, versus placebo (MMRM)

Two patients were not considered in the FAS because not having post-treatment HOMA-IR values available:

- 1 patient under placebo who prematurely stopped before Week 4
- 1 patient under lanifibranor who received 'Metformin' as a rescue medication (intercurrent event) before Week 4



ALT - FAS, N=31 LS Mean Relative change (%) from Baseline to Week 24

AST - FAS, N=31 LS Mean Relative change (%) from Baseline to Week 24



*p<0.05, **p<0.01, ***p<0.001, versus placebo (MMRM)

One patient under placebo was not considered in the FAS because no post-treatment ALT values available (Premature discontinuation before Week 4)

*p<0.05, **p<0.01, ***p<0.001, versus placebo (MMRM) One patient under placebo was not considered in the FAS because no post-treatment AST values available (Premature discontinuation before Week 4) Lanifibranor alone and in combination with empagliflozin significantly reduce hepatic steatosis measured by MRI-PDFF



Liver fat measured by MRI-PDFF, N=26 from Baseline at Week 24

*p≤0.05, versus placebo (ANCOVA – Analysis of Covariance)

Six patients were not considered in the FAS because no MRI-PDFF values available at Week 24:

- 5 patients under placebo who prematurely stopped before Week 24
- 1 patient under lani+empa who significantly modified his/her diet (intercurrent event) before Week 24



Percentage of responders at Week 24	Placebo (n=5)	Lanifibranor (n=12)	lanifibranor + empagliflozin (n=9)
MRI-PDFF ≥ 30%	0%	82%	67%
Absolute reduction of ≥ 5%	0%	67%	67%

.EGEND

Lanifibranor alone and in combination with empaglifozin improves markers of inflammation and fibrosis measured by cT1

Changes in Inflammation and Fibrosis measured by cT1, N=25



LS Mean Absolute change (ms) from Baseline to Week 24

*p=0.06 both, versus placebo (ANCOVA)

Seven patients were not considered in the FAS because of no cT1 values available at Week 24:

- 5 patients under placebo who prematurely stopped before Week 24
- 1 patient under placebo with a missing value at Week 24
- 1 patient under lani+empa who significantly modified his/her diet (intercurrent event) before Week 24

cT1 Absolute Reduction of >80 ms

Percentage of responders at Week 24



LEGEND



HDL-C, N=31

LS Mean Absolute change (mmol/L) from Baseline to Week 24



^{*}p<0.05, versus placebo (MMRM) † p<0.01, versus baseline (MMRM)

One patient under placebo was not considered in the FAS because of no post-treatment HDL-C values available (premature discontinuation before Week 4)

Adiponectin, N=30

LS Mean Fold change from Baseline to Week 24



*p<0.05, versus placebo (MMRM)

Two patients were not considered in the FAS because not having post-treatment adiponectin values available:

- 1 patient under placebo who prematurely stopped before Week 4
- 1 patient under lanifibranor who received 'Metformin' as rescue medication (intercurrent event) before Week 4

The combination of empagliflozin and lanifibranor addresses the weight gain observed in some patients treated with lanifibranor alone

LEGEND



Weight change, N=32 Relative change from Baseline (%)

At Week 24, 7 patients without weight values available :

- 5 patients under placebo who prematurely stopped before Week 24
- 1 patient under lani+empa with missing data at Week 24, and 1 patient under lani+empa who significantly modified his/her diet (intercurrent event) before Week 24.

Lanifibranor alone and in combination with empagliflozin leads to a shift towards metabolically healthy adipose tissue

Ratio VAT/SAT, N=19 LS Mean Relative change (%) from Baseline to Week 24



SAT=Subcutaneous Adipose Tissue, VAT=Visceral Adipose Tissue

* p=0.08, **p<0.01, versus placebo (ANCOVA)

Thirteen patients were not considered in the FAS because of no VAT/SAT values available at Week 24:

- 5 patients under placebo who prematurely stopped before Week 24
- 1 patient under placebo / 4 patients under lanifibranor / 3 patients under lani+empa with missing values at Week 24

Safety and tolerability: Treatment-Emergent Adverse Events (TEAE)



TEAE Overview	Placebo (n=10)	Lanifibranor (n=12)	Lanifibranor + Empagliflozin (n=10)
TEAE	6 (60%)	10 (83%)	8 (80%)
Drug-related TEAE	2 (20%)	3 (30%)	5 (50%)
TEAE leading to drug withdrawal	0	0	0
Serious TEAE	0	0	0
Severe TEAE	0	0	0
Any AE of Specific Interest			
Aminotransferase elevation	0	0	0
Anemia ^a	1	2	0
Peripheral edema	0	0	1 ^b
Hypoglycaemia ^c	1	0	1 ^d
Most Frequent (≥10%) TEAEs by SOC			
Infections and infestations	3 (30%)	2 (17%)	5 (50%)
Musculoskeletal and connective tissue disorders	3 (30%)	1 (8%)	1 (10%)
Gastrointestinal disorders	2 (20%)	3 (25%)	2 (20%)
Skin and subcutaneous tissue disorders	2 (20%)	4 (33%)	0 (0%)
Nervous system disorders	1 (10%)	2 (17%)	1 (10%)

^a Defined as haemoglobin levels <Lower Limit Normal. The 3 events reported were assessed as not related to study drug.

^b The event was assessed as related to lanifibranor/not related to empaglifozin, of mild severity with no associated symptoms, that further recovered without corrective treatment.

^c Defined as glucose levels <Lower Limit Normal. Glucose values were > 3 mmol/L for the 2 events reported. Both events were assessed as not related to study drug, of mild intesity and required no treatment. ^d Related to empaglifozin only.



- The primary efficacy endpoint based on reduction of HbA1c was met for both lanifibranor alone and for the combination with empagliflozin.
- The combination of lanifibranor with empagliflozin addresses / neutralizes weight gain seen in some patients on lanifibranor alone.
- Both lanifibranor alone and the combination with empagliflozin induce a redistribution of fat from visceral to subcutaneous fat. This is consistent with the improved insulin sensitivity seen with both lanifibranor alone and the combination.
- Lanifibranor improves markers of cardiometabolic health, the effect size appear to be further improved when lanifibranor is combined with empagliflozin.
- > Lanifibranor alone and in combination with empagliflozin appear to be safe and well tolerated.