



**Unlocking Therapeutic Potential in Fibrosis & Oncology**

Corporate Presentation, 9 November 22

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# Nuformix: Who we are

## LEADERSHIP TEAM



**Dr Dan Gooding**

*Executive Director, Founder*

- >20 years in pharma in commercial, technical & business development
- Multiple out-licensing & financing transactions
- Established multiple early-stage life science businesses



**Dr Julian Gilbert**

*Non-Executive Chairman*

- >30 years in pharma in commercial, technical & business development
- Co-founder / former CEO of Acacia Pharma; Co-founder / Commercial Director of Arakis



**Ms Maddy Kennedy**

*Non-Executive Director*

- Over 20 years of experience in life sciences
- Numerous IPO, M&A, fundraising transactions and strategic review as CFO



## VIRTUAL DEVELOPMENT TEAM

**Dr Simon Cruwys**

*R&D/Pharmacology*

- TherapeutAix
- >30 years in pharma R&D
- AZ, Grünenthal

**Bob Humphries**

*R&D/Pharmacology*

- TherapeutAix
- >30 years in pharma R&D
- AZ, Adhale

**Mark Saunders**

*Project Management, CMC*

- P2C Pharma
- >20 years in pharma R&D
- Aptuit, Kuecept

**Dr Joanne Holland**

*Intellectual Property*

- Millenium
- >20 years in pharma R&D

**Prof. Chris Frampton**

*Drug Solid Form*

- RBar3
- >30 years in pharma R&D
- Roche, Pharmorphix

# Nuformix: What we do

**NFX is a drug development company leveraging its expertise, technology and IP to fundamentally change the therapeutic and commercial potential for known drugs**

- > **Strategy:** Progress risk-reduced programmes to proof-of-concept and out-license for commercialisation
- > **Disease Focus:** Fibrosis and Oncology
- > **Key Programmes:**
  - > ***NXP002: Idiopathic Pulmonary Fibrosis (IPF)***
    - > Development of a proprietary form of tranilast as an innovative inhaled treatment for IPF and related disease
    - > Scope for broad label expansion based on growing human evidence-base and action against recent commercially attractive targets (e.g. NLRP3 inflammasome)
  - > ***NXP004: Oncology***
    - > PARP inhibitor programme, targeting enhanced performance of Lynparza via proprietary cocrystal forms of Olaparib
  - > ***NXP001: Oncology***
    - > NK1 antagonist oncology programme licensed to Oxilio
- > **Multiple pre-clinical/Phase 1-ready assets with significant value potential & scope for early licensing**

# Our Expertise in Drug Repurposing Allows Nuformix to Maximise Commercial Opportunities

Discovery, development & IP protection of new, differentiated drug forms enables new high-value applications

## Enhance the therapeutic potential and commercial value of existing drugs

- Generate and validate new IP using various technologies to create new commercial value
- New differentiated drug forms solve historic limitations that have hindered drug development
- Re-develop new products based on a strong scientific rationale

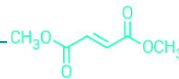
## Various advantages gained from existing data, particularly safety

- Improved insight, decision-making & probability of success
- Faster clinical proof-of-concept
- Reduced development costs

## Making a bigger difference to patients

- Rapid and safer path to patient access
- Opportunity to change the lives of patients affected by diseases with high unmet medical needs

Value creation  
from drug  
repurposing



Dimethyl fumarate

Peak 2019 sales £3.9bn

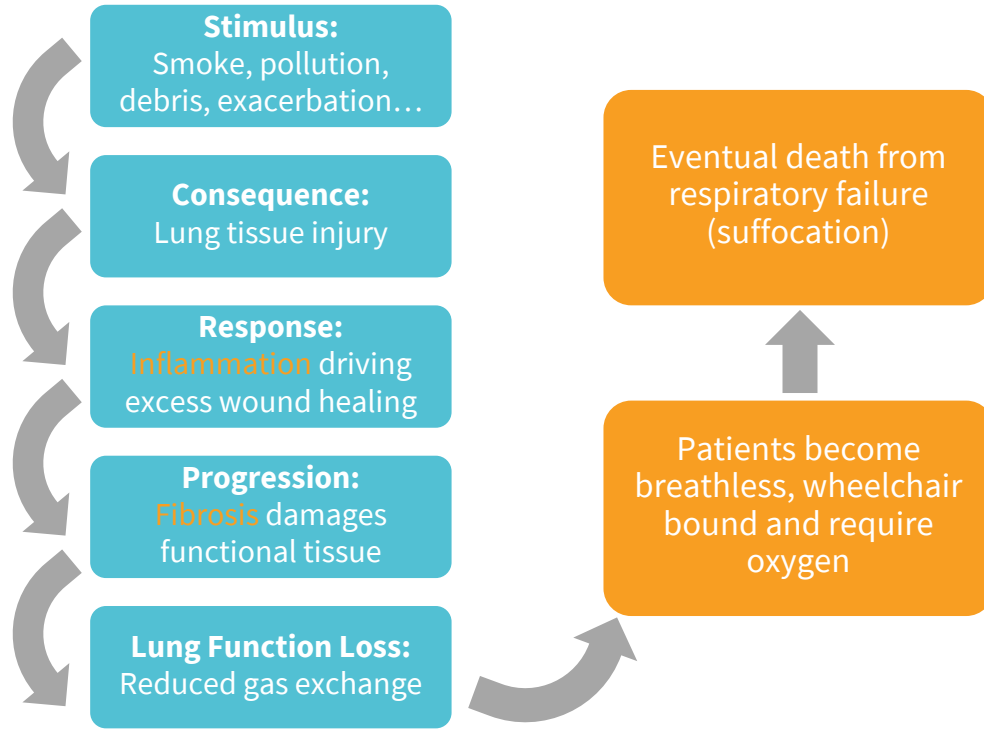


Ultibro/Seebri: £493m (2019)  
Out-licence deal: £338m

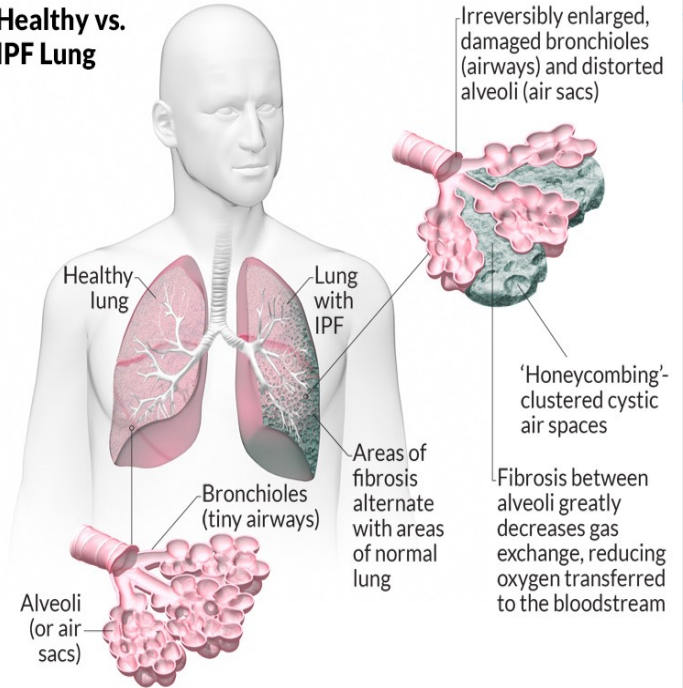


2013 sales (peak):  
Ebixa (EU/RoW) - £306m  
Namenda (US) - £1.37 bn

# NXP002: Summary of IPF Disease Process and Physiology



## Healthy vs. IPF Lung



# NXP002: Clear unmet medical need in IPF

## High-mortality rare disease

- > Devastating, degenerative respiratory disease caused by progressive scarring (fibrosis) in the lung
- > Irreversible and currently fatal disease with a median survival time of 2-5 years
- > Affects 3 million people worldwide, including 130,000 in the US – an Orphan Indication
  - Average age of diagnosis is 66 years
  - Increasing global prevalence
  - Acute exacerbations can impact disease progression and hasten death; up to 20% patients each year
- > Quality of life for end-stage disease is very poor
- > High healthcare cost-burden

## High patient unmet need

- > Only two currently approved treatments (pirfenidone and nintedanib)
- > Both are marginally efficacious and not significantly life extending
- > Both have significant side-effects that represent strong impact patient quality of life
  - GI tract
  - Nausea/vomiting
  - Photosensitivity
- > Up to 40% discontinuation rate in certain patient populations
- > Lung transplant only viable treatment option



# NXP002: Significant Commercial Opportunity in IPF

Fast-growing market driven by orally delivered  
Ofev® (nintedanib) & Esbriet® (pirfenidone)

US launches 2014

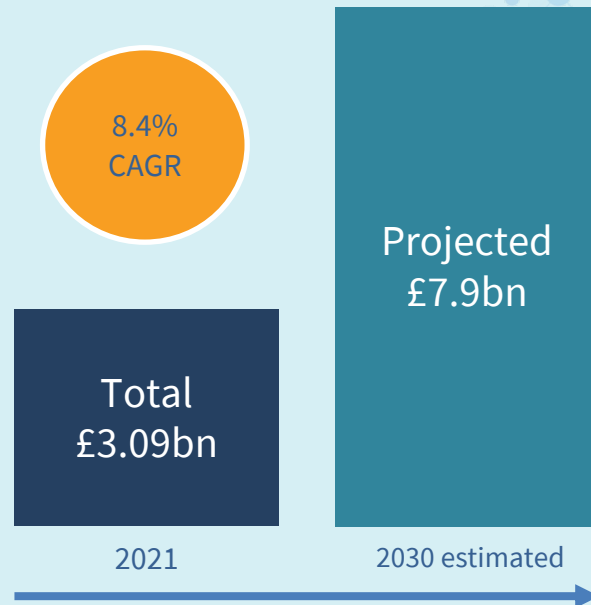
## Global Sales

- Esbriet: 2021 CHF 1.04 bn (~GBP 0.92 bn)
- Ofev: 2021 EUR 2.5 bn (~£2.17 bn)
- US market responsible for 85% of global sales

## US Pricing<sup>2</sup>

- \$123k/year Esbriet
- \$135k/year Ofev

IPF market in 7 major markets<sup>1</sup>: Largest market is US, followed by UK, Italy, Japan, Germany, France, Spain



1. Figures from DelveInsight IPF Market Insights, Epidemiology and Market Forecast – 2017 – 2030

2. Current wholesale acquisition price for 365 days per year treatment at recommended dosing regimen (RedBook)



# NXP002: Strong underlying rationale for development for IPF

## Tranilast Background:

- > Invented by Kissei Corporation, Japan
- > Secured approvals throughout Asia for:
  - **Asthma:** First oral treatment for use in adults and children, believed to act via mast cell inhibition (anti-inflammation)
  - **Scar Prevention:** Oral treatment, believed to act via anti-proliferative effects (anti-fibrotic)
- > Never approved in US or Europe
- > Used in US through pharmacy compounding loophole for scar treatment
- > Nuformix initially discovered novel physical forms of Tranilast in 2012, researching repurposing therapies for dermatological conditions

## Strong mechanistic alignment:

### Anti-inflammatory

Inhibits multiple fibrosis-related inflammatory mediators including the **NLRP3** inflammasome

### Anti-proliferative

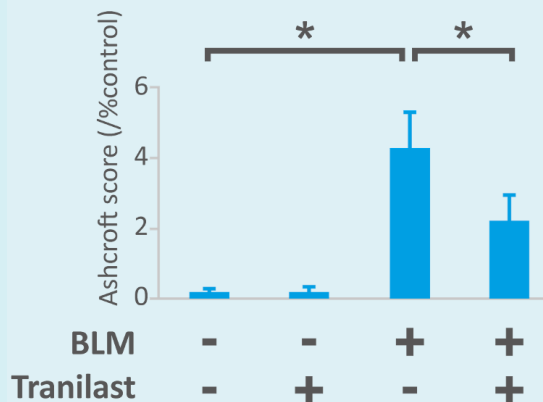
Inhibits synthesis and action of **TGF- $\beta$**  (and downstream mediators e.g. CTGF, SMADs, MAPK)

#### References:

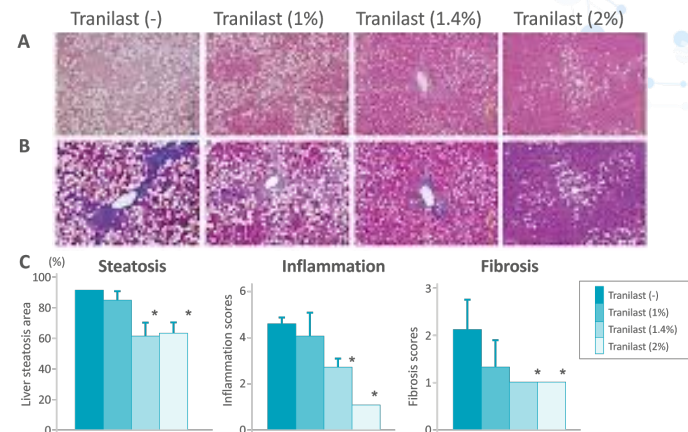
Kato *et al*; Drug Design, Development and Therapy 2020:14  
Huang *et al*; EMBO Molecular Medicine 10: e8689 | 2018

# NXP002: Growing evidence base supports development for IPF

## Oral tranilast in bleomycin (BLM) model<sup>1</sup> – gatekeeper for IPF



## Tranilast also effective in model of liver fibrosis (NASH)<sup>2</sup>

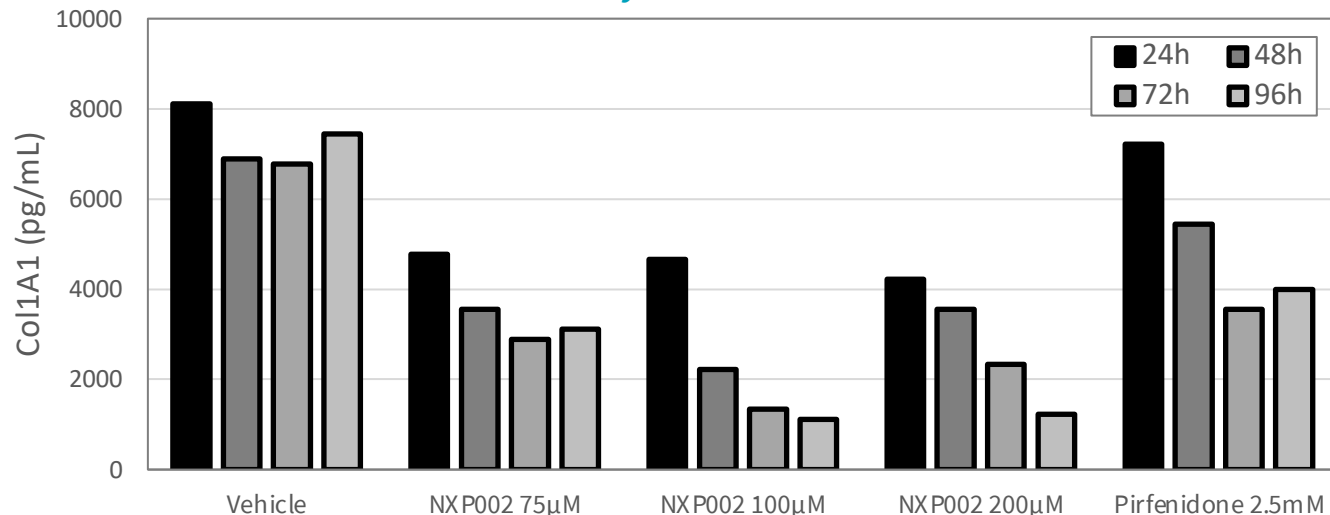


Pandemic initiated a new wave of clinical research investigating oral delivery for COVID19-induced fibrosis – results still emerging:

- > **Oshitani et al, March 2022:** Amelioration of fibrosis and full recovery of lung function for severe pneumonia patient
- > **Saeedi-Boroujeni et al, June 2022:** 45% hospitalization reduction and 75% mortality reduction in COVID19 patients

# NXP002: Anti-fibrotic highlights – human IPF tissue dose response

Col1a1 is a key biomarker for fibrosis



**High Challenge End-Stage ‘Close-to-Patient’ Model:** Tranilast significantly inhibits key anti-inflammatory and anti-fibrotic biomarkers associated with IPF disease progression

# NXP002: Strategy and IP address key development challenges

## Tranilast isn't viable orally in IPF

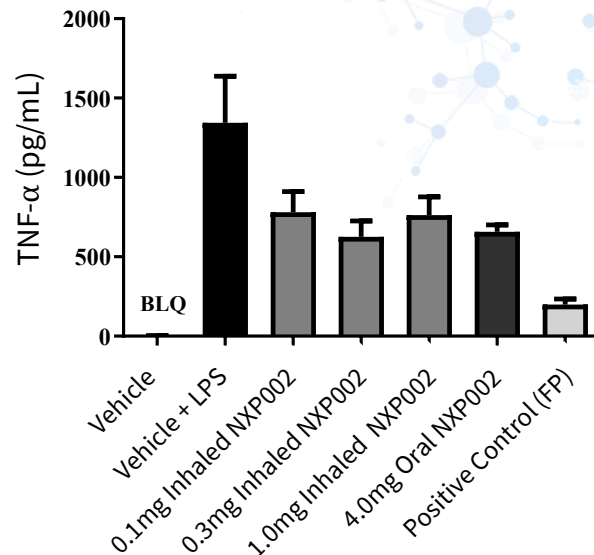
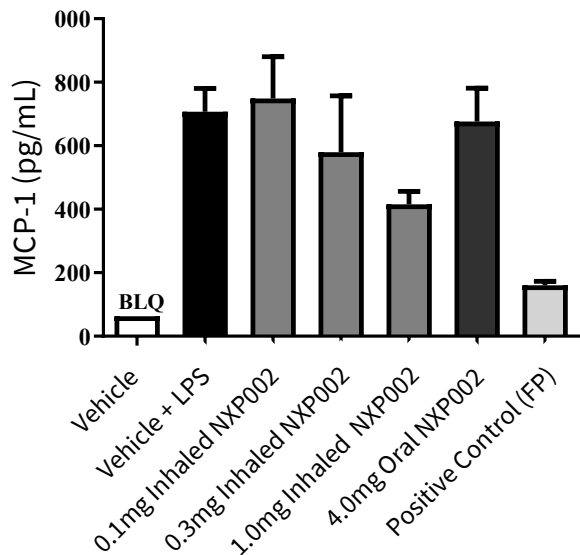
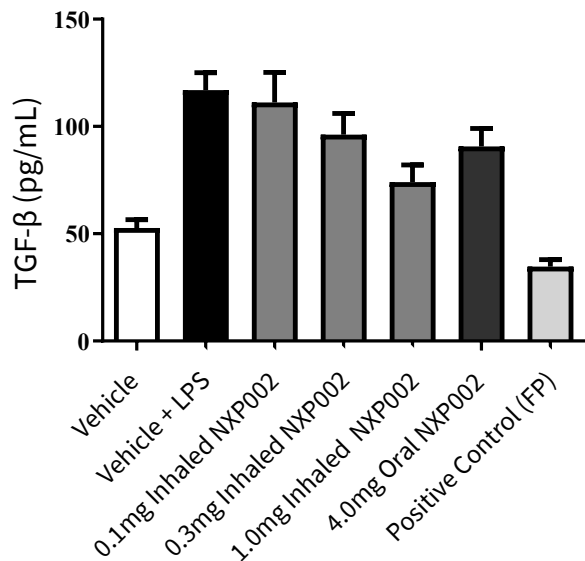
- > Anti-fibrotic and anti-inflammatory effects appears to require tissue/plasma levels of tranilast of  $\sim 100 \mu\text{M}$
- > The approved dose of tranilast for asthma treatment (100mg TID) does not achieve the required exposure
- > Data from previous studies demonstrates that liver toxicity, albeit reversible, limits dose escalation
- > **NXP002 Solution:**
  - Local delivery to the site of action is required
  - Opportunity to maximise concentration in the lung but significantly reduce systemic exposure
  - Tranilast's clinical safety profile is well understood, offering great scope for therapeutic index via inhalation

## Deep-lung delivery essential

- > Fibrosis ingression occurs from the lung periphery
- > Innovation in modern handheld smart nebulisers can deliver drug to these small airways with high patient convenience and compliance
- > Requires concentrated aqueous drug solutions to achieve delivery of a therapeutic dose
- > Not possible for Tranilast or its known salt forms
- > **NXP002 Solution:**
  - Proprietary drugs forms are highly soluble and protected via granted patents
  - Creates potential for leveraging key pharmacology in the deep lung following inhalation to treat IPF

# NXP002: Inhalation highlights – LPS challenge dose response

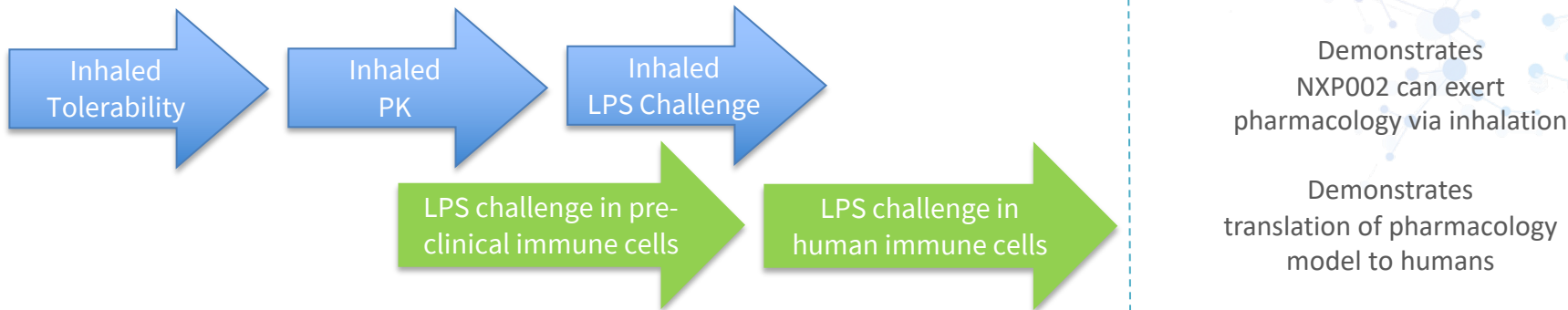
\*Dosing 30 minutes pre-challenge, data 4 hours post-challenge



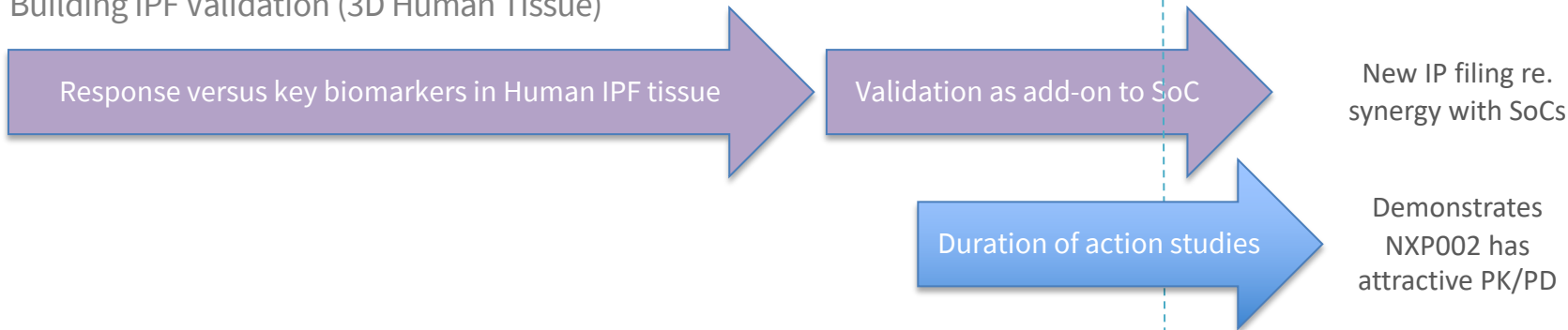
**Pre-clinical Inhaled LPS Challenge:** Tranilast shows greater inhibition of fibrosis-related cytokines following inhalation (nebulisation) than oral delivery.

# NXP002: Pre-clinical development strategy has discharged key risks

## Building Inhalation Tolerability, PK/PD & Translational Story (LPS Challenge)



## Building IPF Validation (3D Human Tissue)



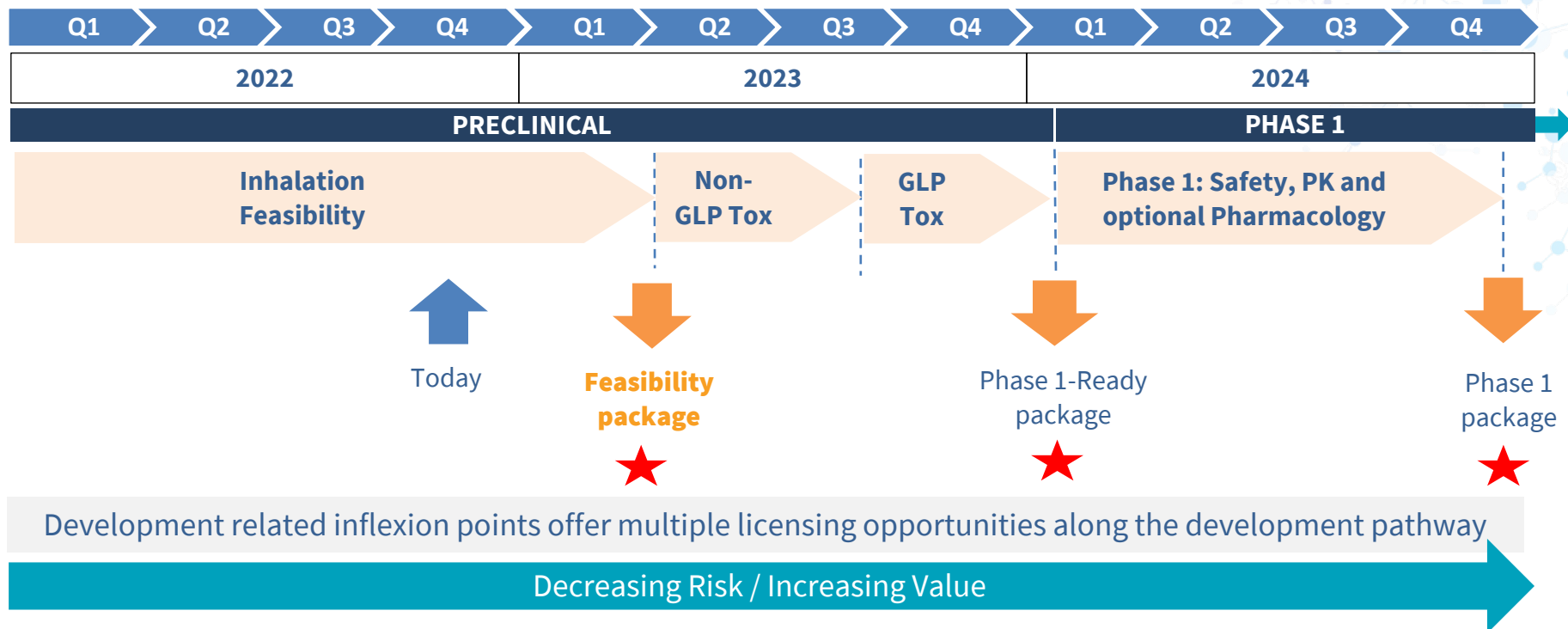
# NXP002: Pre-clinical Summary

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- > **NXP002 can inhibit key markers of fibrosis and inflammation in a high-challenge, ‘close to patient’ IPF disease model**
  - Consistently positive effects seen when NXP002 was dosed alone on both fibrotic and inflammatory markers
- > **NXP002 in combination with SoC’s significantly improves efficacy**
  - Offers the opportunity to reduce the dose of SoC significantly improving tolerability
- > **NXP002 shows dose-dependent reduction of IPF-related biomarkers following inhalation**
  - Early signs are that NXP002 is well tolerated, even at high doses
- > **Progressing further studies to finalise the pre-clinical feasibility of NXP002 as an inhaled therapy:**
  - *Ex-vivo* studies on-going to finalise positive SoC combination effects and evaluate duration of action
  - Collectively these studies will form an **“inhalation feasibility package”**



# NXP002: Potential development plan outline



## NXP002: Programme out-licensing in IPF by development stage

Development Stage	No. of Deals	Average Upfront Fee	Average Total Deal Value
Pre-clinical	2	£67m	£328m
Phase 1	7	£61.5	£425m
Phase 2	2	£235m	£1.15bn
Phase 3	2	£1.7bn	£6.4bn

# NXP002: Programme highlights



NXP002 (new form of Tranilast) repurposed as a novel inhaled treatment for idiopathic pulmonary fibrosis (IPF)



Preclinical stage asset with robust IP protection - Nuformix strategy is to out-license this asset with targeted BD activities already underway



Strong literature data on activity of Tranilast in fibrosis backed up by Nuformix data on NXP002 in human IPF lung tissue, with inhalation (in vitro / in vivo) feasibility studies completed



Opportunities to explore additional indications beyond IPF including Acute Respiratory Distress Syndrome and COVID-related conditions

## NXP004: Background

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- > Focused on the development of patented cocrystal forms of the small molecule, olaparib.
- > Olaparib belongs to a class of molecules known as PARP inhibitors, which are becoming a mainstay in the treatment of certain cancers.
- > Marketed by AstraZeneca as Lynparza, olaparib was the first PARP inhibitor to be approved for use in cancer and is the clear market leader.
- > Sales of Lynparza in 2021 reached £2.16bn (23% increase on 2020). Zejula (GSK's PARP product) achieved £395m and Rubraca (Clovis) £119m for the same period.
- > Peak sales of Lynparza are forecast to reach ca. £8bn prior to key patent expiry.

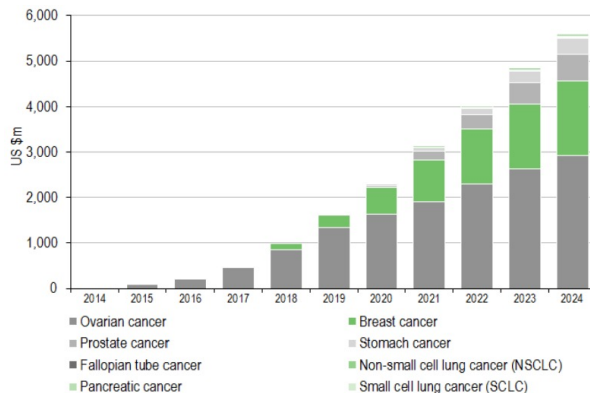
## NXP004: Background

- > Initial product had limitations due to the high dose (400mg/BID) and issues with low drug solubility under biorelevant conditions, resulting in a high pill burden
  - 8 x 50 mg capsules (400 mg) given twice daily under fasted conditions
- > Required bio-enhancement technologies enhance in vivo dissolution and solubility
- > Subsequently, a melt-extruded tablet formulation was developed (amorphous Olaparib dispersed in PVP) to improve PK/PD profile and reduce the pill burden (200-300mg/BID)

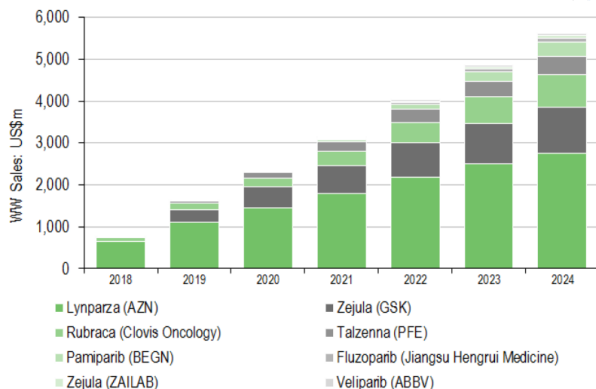


# NXP004: Lynparza to dominate PARP inhibitor market landscape

PARP inhibitor forecasts by indication



PARP inhibitor sales forecasts



- **Date for generic product entry:**
  - **US:** March 2027 – upheld by granted patents relating to the molecule as a DNA damage repair agent in cancer.
  - **Europe:** March 2029 – held by a variety of SPC's granting exclusivity
  - Currently marketed formulation of Lynparza protected until expiry in 2029
- **Opportunity for early US market entry if alternative formulation approach can be identified**

## NXP004: Proprietary cocrystals offer a potential opportunity

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- > Nuformix has patented two families of novel olaparib cocrystals with a broad range of enhanced physico-chemical properties.
- > Even at the earliest date for generic entry, this still leaves sufficient time for Nuformix to:
  - Validate its technology for the purpose of an improved product targeting out-licensing to AZ
  - Validate its technology for the purpose of a bioequivalent or bio-better product targeting out-licensing to a generic
- > If a cocrystal approach could match Lynparza in terms of bioequivalence, this may facilitate market entry 2.5 years earlier into the US market (>60% of global sales), which is attractive
- > Nuformix has FTO outside of fundamental patents governing market entry for olaparib



# NXP004: Dissolution data for v1.0 olaparib cocrystals

Sample ID	Weight (mg)	Salt Form	HPLC Final Concentration (mg/mL)	Average HPLC Final Concentration (mg/mL)	Inform Final Concentration (mg/mL)	Average Inform Final Concentration (mg/mL)
J11092 A	24.20	Free Form	0.12	0.11	0.12	0.12
J11092 B	24.83		0.09		0.12	
J11092 Milled A	25.20	Milled Free Form	0.16	0.15	0.17	0.16
J11092 Milled B	25.02		0.14		0.14	
JBC-2064-22-01 A	30.20	2:1 2,5-Dihydroxybenzoic acid trihydrate	0.14	0.18	0.26	0.25
JBC-2064-22-01 B	29.71		0.22		0.24	
JBC-2064-22-02 A	30.13	2:1 4-Hydroxybenzoic acid trihydrate	0.19	0.17	0.20	0.21
JBC-2064-22-02 B	30.10		0.15		0.21	
JBC-2064-22-03 A	32.08	2:1 2,4-Dihydroxybenzoic acid trihydrate	0.24	0.19	0.36	0.35
JBC-2064-22-03 B	31.27		0.14		0.34	
JBC-2064-27-01 A	34.06	1:1 2,5-Dihydroxybenzoic acid	0.19	0.20	0.22	0.23
JBC-2064-27-01 B	34.23		0.20		0.24	
JBC-2064-27-02 A	33.75	1:1 2,4-Dihydroxybenzoic acid	0.20	0.18	0.30	0.34
JBC-2064-27-02 B	32.74		0.16		0.38	

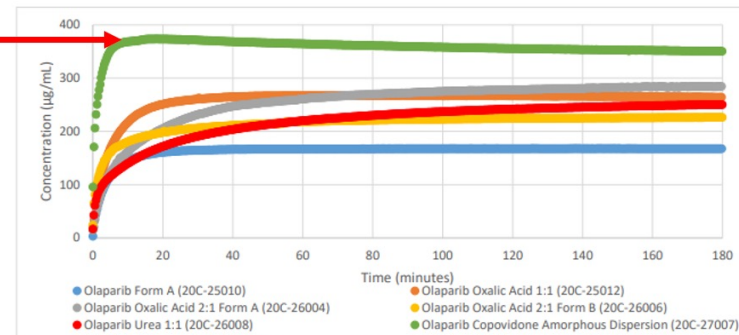
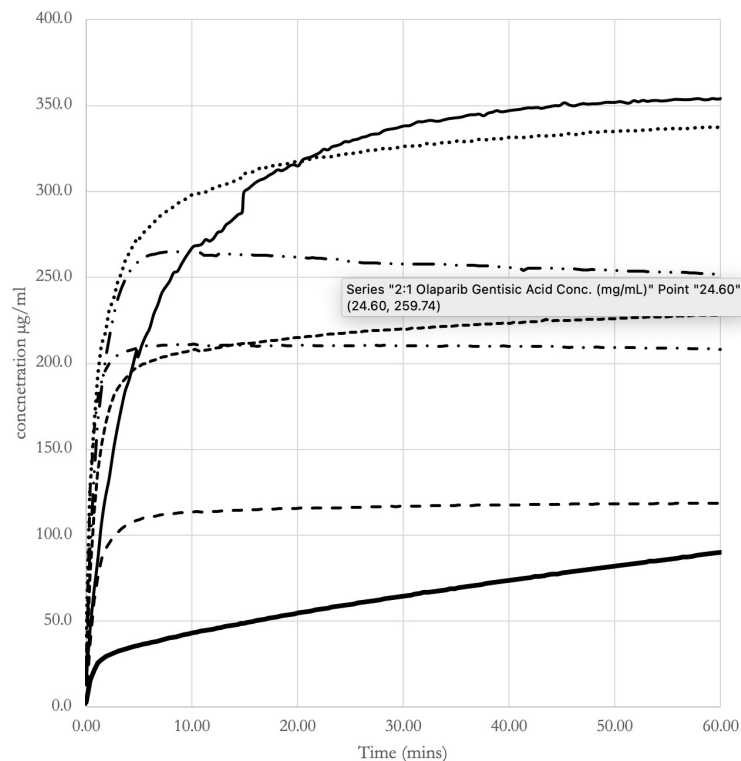


Figure 2 - Dissolution Profiles of Olaparib Cocrystals in FaSSiF V2

**Lynparza®:** Achieves a concentration in simulated intestinal fluid of ~350µg/mL – unformulated Series A cocrystals show promising dissolution enhancement

# NXP004: Dissolution data v2.0 olaparib cocrystals



**Lynparza®:** Unformulated v2.0 cocrystals hit the 350µg/mL target indicating potential for similar in-vivo performance – formulation technology likely to further drive performance

## NXP004: Outlook

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- > Current head-to-head dissolution studies on-going vs marketed Lynparza product
- > Formulation development opportunities identified
  - NFX generated significant experience and know-how following NXP001 clinical programme
- > Progression to 'gatekeeper' pre-clinical pharmacokinetic model to investigate potential for bioequivalence or bio-better
  - Pharmacokinetics results determine next steps
  - Strong existing relationships with potential commercialisation partners

# Nuformix: Summary



Focus

New therapies with attractive commercial potential in fibrosis and oncology



Assets

Potential to derive value in the short-term through further development and /or BD and licensing



Board /  
Leadership

Highly experienced with extensive and relevant expertise



Low cost base

Fully virtual operating model with a broad network of contractors