

# Revolutionising Pulmonary Medicine

June 2025

**POLAREAN**

Making Lung Function Visible

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# Our Mission and Vision



## Mission

Revolutionising pulmonary medicine  
through direct visualisation of lung function

## Vision

Optimise lung health and prevent avoidable loss  
by illuminating hidden disease























**Detect | Guide | Monitor**



# Polarean Senior Management Team



Successful, experienced healthcare professionals with proven track record

		Selected Prior Company Affiliations
 <b>Christopher von Jako, PhD</b> CEO & Executive Director	<ul style="list-style-type: none"> <li>Joined in 2023</li> <li>30+ years of global executive leadership experience in MedTech with a primary focus on capital image guidance equipment</li> <li>Led organisations in early-stage, expansion, and turnaround environments with five entities resulting in M&amp;A</li> </ul>	 ST. JUDE MEDICAL  NeuroTherm®  Medtronic  INTEGRA  COVIDIEN  RADIONICS Trusted Accuracy
 <b>Charles Osborne</b> CFO & Executive Director	<ul style="list-style-type: none"> <li>Joined in 2019</li> <li>30+ years of global life sciences experience, 20+ years as CFO</li> <li>Extensive public company, corporate partnering, and M&amp;A experience</li> </ul>	 innocrin precision therapeutics  SCYNExis
 <b>Alex Dusek</b> Chief Business Officer	<ul style="list-style-type: none"> <li>Joined in 2019</li> <li>25+ years of global executive commercial leadership in Pharma, Biotech, &amp; MedTech</li> <li>Led global pulmonary pharma product launches</li> </ul>	 Boehringer Ingelheim  BAYER  United Therapeutics CORPORATION
 <b>Alan Huang, PhD</b> VP of Global Sales	<ul style="list-style-type: none"> <li>Joined in 2024</li> <li>15+ years of global business leadership experience in MedTech with a primary focus on capital image guidance equipment</li> <li>Experience in creating new markets and growing businesses with novel technologies.</li> </ul>	 PHILIPS  JOHNS HOPKINS MEDICINE
 <b>Chase Hall, MD</b> Chief Medical Advisor	<ul style="list-style-type: none"> <li>Joined in 2024</li> <li>Associate Professor of Medicine at the University of Kansas Medical Center in the Division of Pulmonary and Critical Care &amp; also serves as Associate Director at the University of Kansas Interstitial Lung Disease and Rare Lung Disease Clinic</li> </ul>	 Washington University in St. Louis SCHOOL OF MEDICINE  BARNES JEWISH Hospital HealthCare
 <b>Bastiaan Driehuys, PhD</b> Chief Scientific Officer & Founder	<ul style="list-style-type: none"> <li>Joined in 2012</li> <li>A Polarean founder and technology founder with over 100 peer-reviewed articles on hyperpolarised gases and holds over 30 patents in this area</li> <li>Professor in the Department of Radiology at Duke University Health System</li> </ul>	 Amersham Health

# At a Glance

➤ Commercial-stage functional lung imaging company with 20+ customers

➤ First and Only FDA-Approved Inhaled MRI Contrast Agent compatible with Philips, GE HealthCare, and Siemens MRIs

➤ Favorable reimbursement for the 10-second image strengthens hospital economics, fuelling adoption

➤ **20+** Patents Granted

Philips Partnership



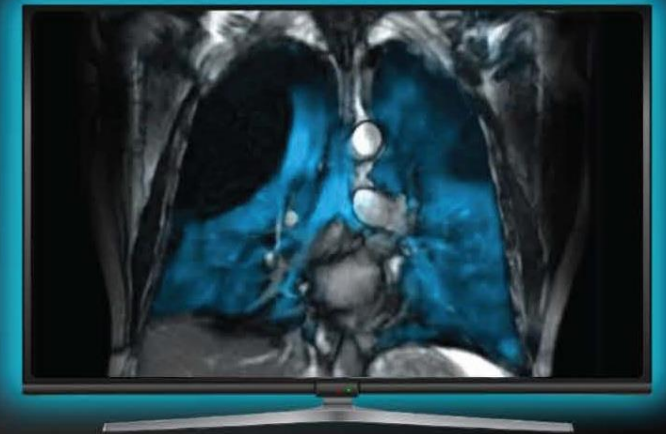
**XENOVIEW®**  
(xenon Xe 129 hyperpolarized) for oral inhalation

Changing  
How We View  
Lung Function



Standard Proton MRI scan

Modern  
Respiratory  
Imaging



Xenon MRI

## Indication

XENOVIEW, prepared from the Xenon Xe 129 Gas Blend, is a hyperpolarised contrast agent indicated for use with MRI for evaluation of lung ventilation in adults and **pediatric patients aged 6 years and older**.

## Limitations of Use

XENOVIEW has not been evaluated for use with lung perfusion imaging.

# Investment Opportunity

## Significant global unmet clinical need to improve lung health

### Functional Lung Imaging Platform

Proprietary | Non-invasive | Radiation-free | Sensitive | Fast | FDA-approved | U.S.-reimbursed | Lucrative Per-patient Consumable Revenue Model

### Large Total Addressable Market

\$2B+ U.S.\*

\$19B+ Global\*

Lung Airway Disease

Lung Cancer

### Massive Label Expansion Market

\$3B+ U.S.\*

\$39B+ Global\*

Lung Tissue Disease

Pulmonary Vascular Disease

### Pharma / Research Markets

Drug Development

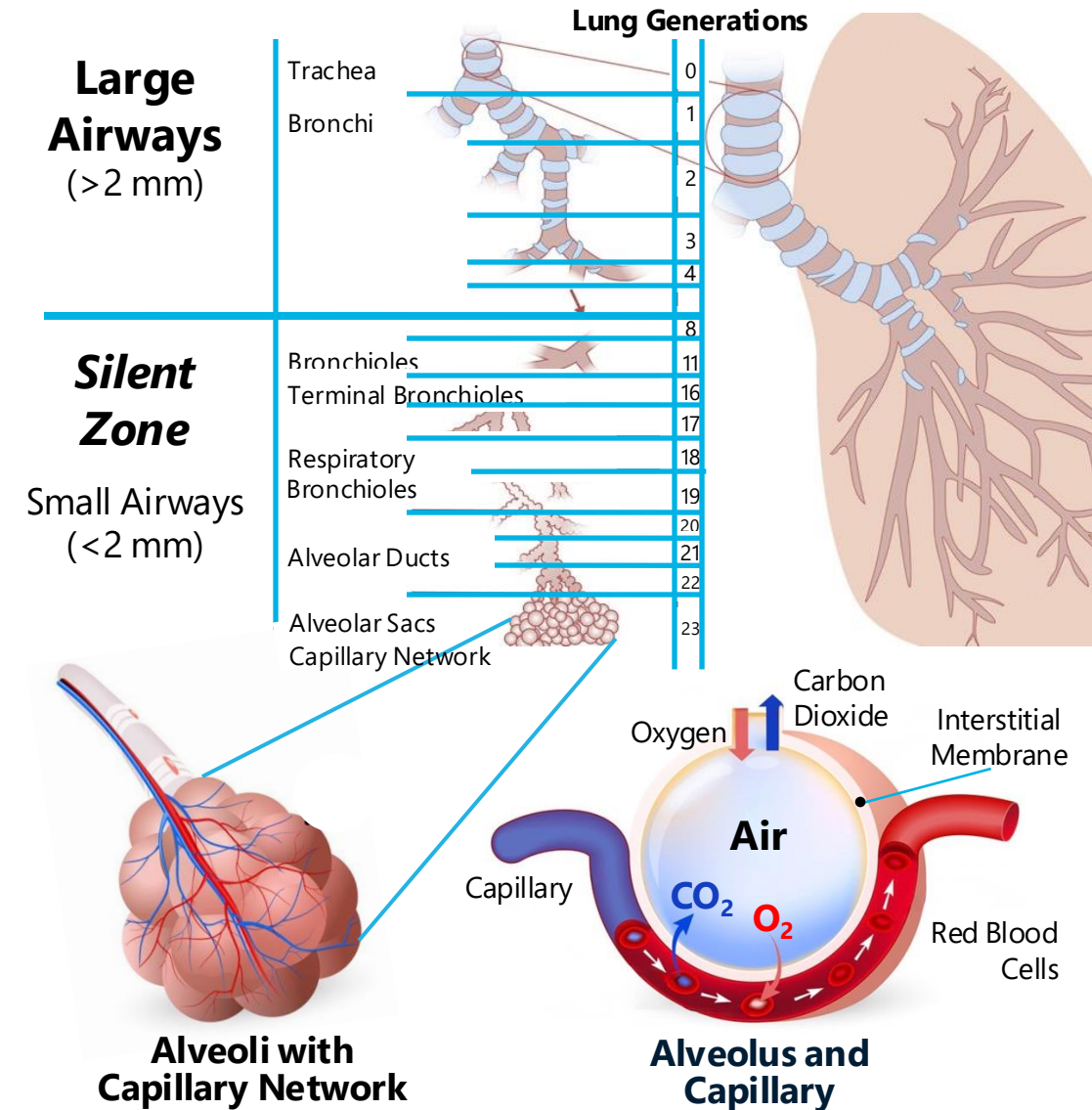
Comparative Effectiveness Trials

Sensitive, non-invasive biomarkers speed trials and market entry



# Optimise Lung Health

- The Challenge
  - Traditional tests miss early lung dysfunction in the *Silent Zone* — delaying diagnosis and risking irreversible damage.
- The Solution
  - Xenon MRI illuminates hidden losses — enabling earlier detection, better treatment decisions, and the potential to protect lung health.



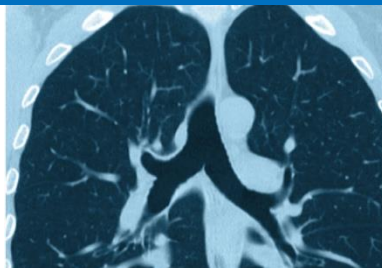
# Decades Without Advancement

## Traditional lung assessments rely on blunt tools that fall short



### Chest X-Ray

Developed in 1896  
70m Total US procedures/yr.



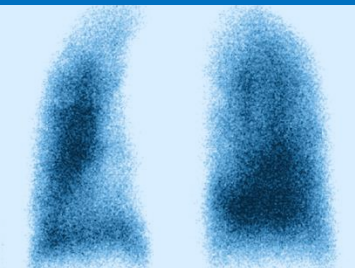
### CT Scan

Developed in 1971  
10m Total US procedures/yr.



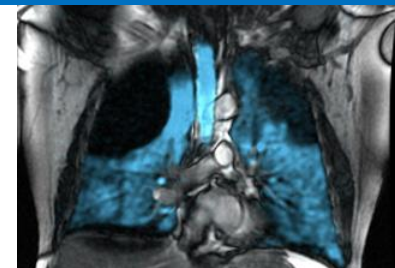
### Spirometry

Developed in 1846  
35m US procedures/yr.



### Scintigraphy

Developed in 1964  
500k Total US procedures/yr.



### Xenon MRI

FDA Approval 2022  
20+ sites and growing

**Sensitive to  
Silent Zone?**

✗ NO

✗ NO

✗ NO

✗ NO

✓ YES

**Functional  
Measure?**

✗ NO

✗ NO

✓ YES

⚠ PARTIAL

✓ YES

**Visualisation?**

✓ YES  
Structure only

✓ YES  
Structure only

✗ NO

⚠ LOW-RES

✓ YES

**Radiation-  
free?**

☢ NO

☢ NO

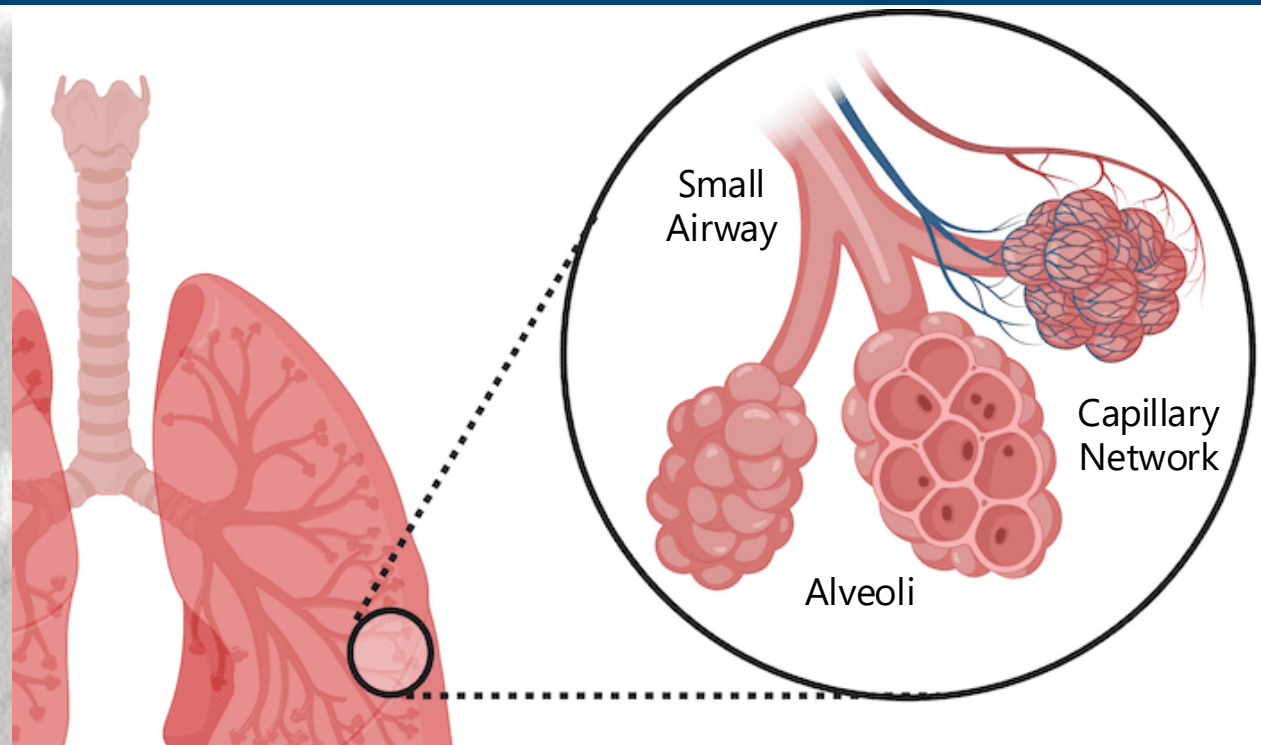
✓ YES

☢ NO

✓ YES



# Structure vs. Function



## WHAT CT CAN SEE

Upper branch lung STRUCTURE

## WHAT CT CAN'T SEE

Silent Zone FUNCTION

# Benefits Over Spirometry

- Less Effort Dependent
- Not everyone can do Spirometry
- Lower Test/Retest Variability
- More Sensitive Measure of Small Airway Disease ("Silent Zone")
- Direct, Quantitative, and Visual Imaging of Lung Function
- Personalised, Direct Measurement of Lung Function

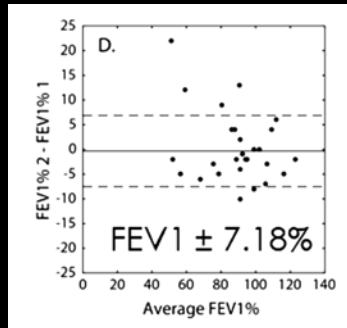
Spirometry



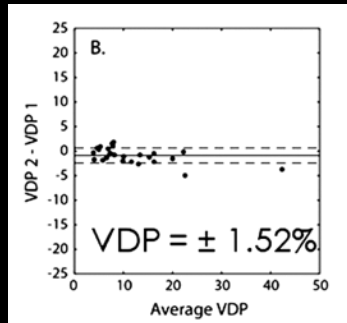
Xenon MRI



Repeatability in Spirometry

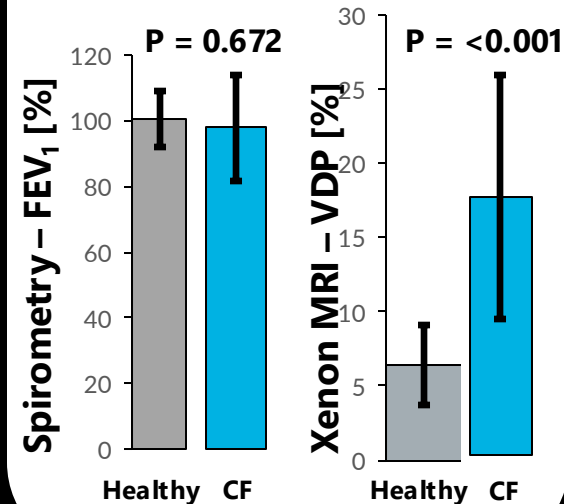


Repeatability in Xenon MRI



Invest Radiol. 2017 Feb;52(2):120-127.

Xenon MRI differentiates Mild Cystic Fibrosis (CF) from Healthy Patients



Walkup L, et. al., J Magn Reson Imaging 2024

Healthy 21 yo Female  
Spirometry = **101%**

**VDP = 1%**

Cystic Fibrosis 13 yo Male  
Spirometry = **106%**

**VDP = 26%**

Courtesy of University of Missouri, unpublished

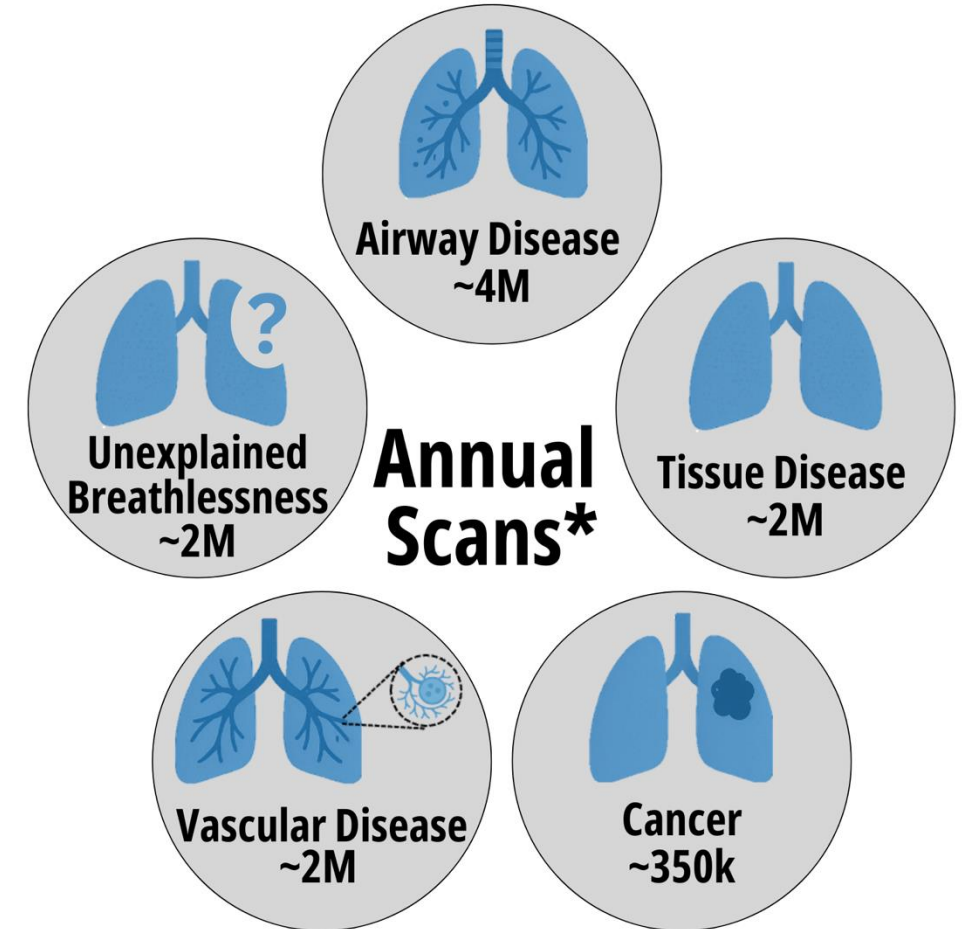
# Targeting a Large, Unmet Need in Lung Disease **POLAREAN**

Serving critical needs across five major respiratory conditions

**Across the US, over 5 million people are affected by lung diseases are suited for Xenon MRI**

## Multiple factors drive demand for advanced diagnostics

- Aging Population - US Census Bureau projects older adults will outnumber children by 2035
- Obesity – Center for Disease Control says 41.9% of US population is obese
- Pulmonary Long Covid - Growing population with persistent respiratory symptoms
- Lung Cancer - The second most common cancer and leading cause of cancer death
- Rising Respiratory Costs - Respiratory diseases are major drivers of healthcare spending
- Industry Tailwinds - Respiratory Diagnostics & Pharma Market are growing fast
- Rare & Orphan Lung Disease - Challenging for patients, physicians, and researchers





# Introduce the Power/Safety of MRI to the Lung **POLAREAN**

Underutilisation of MRI in lung imaging until **now**



No radiation exposure to patient



Spatially distributes to image the smallest airways



Evaluates Regional Lung Ventilation



Non-effort dependent procedure



Single 10-second breath hold generates a full 3D

# Our Solution: Xenon MRI Platform

POLAREAN

Game-changing drug-device imaging product with per patient consumable

## Hospital Hyperpolarisation Lab



Multi-dose  
Xenon Cylinder



Dose  
Production



Dose  
Measurement

4 dose  
bag sizes



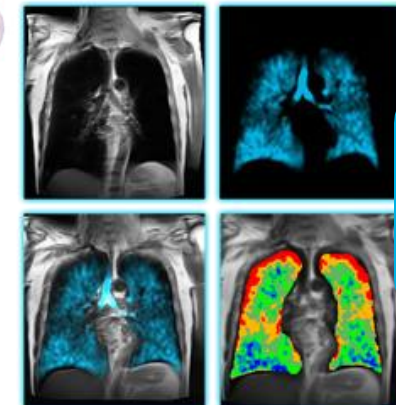
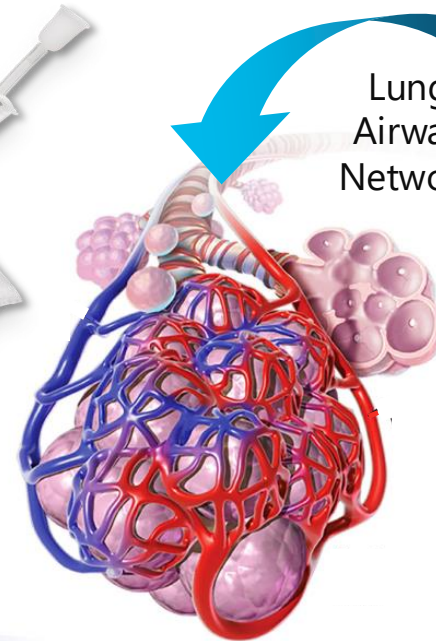
XENOVIEW®  
Active Dose

## Hospital MRI Suite



**XENOVIEW®**  
(xenon Xe 129 hyperpolarized) for oral inhalation

Lung  
Airway  
Network



XENOVIEW  
3T Chest Coil

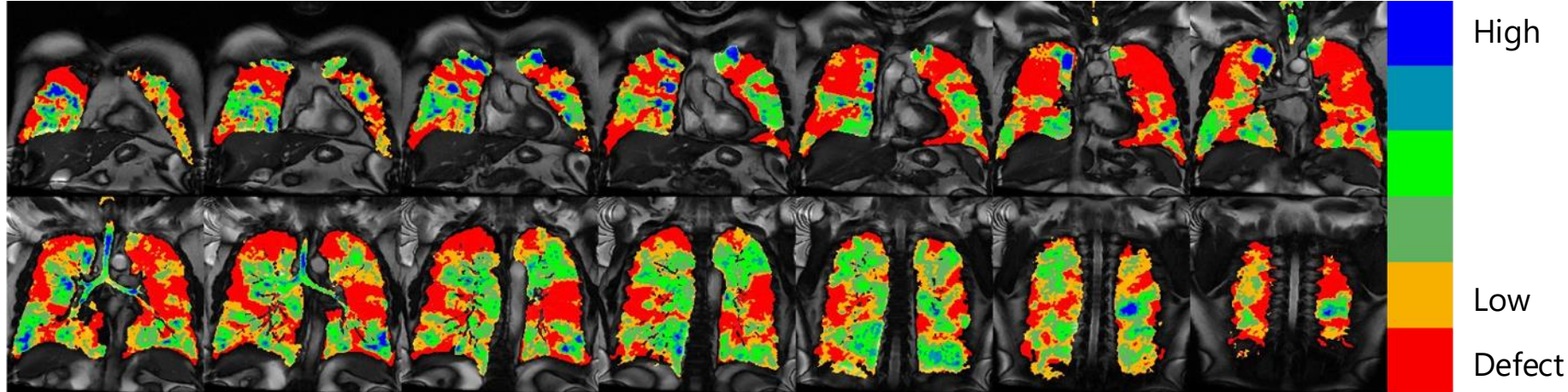
XENOVIEW VDP software



# Our Solution: Xenon MRI Platform

Only pulmonary function test that provides regional visual and quantitative data

Pre-treatment



High

**Ventilation Defect  
Percentage (VDP):**

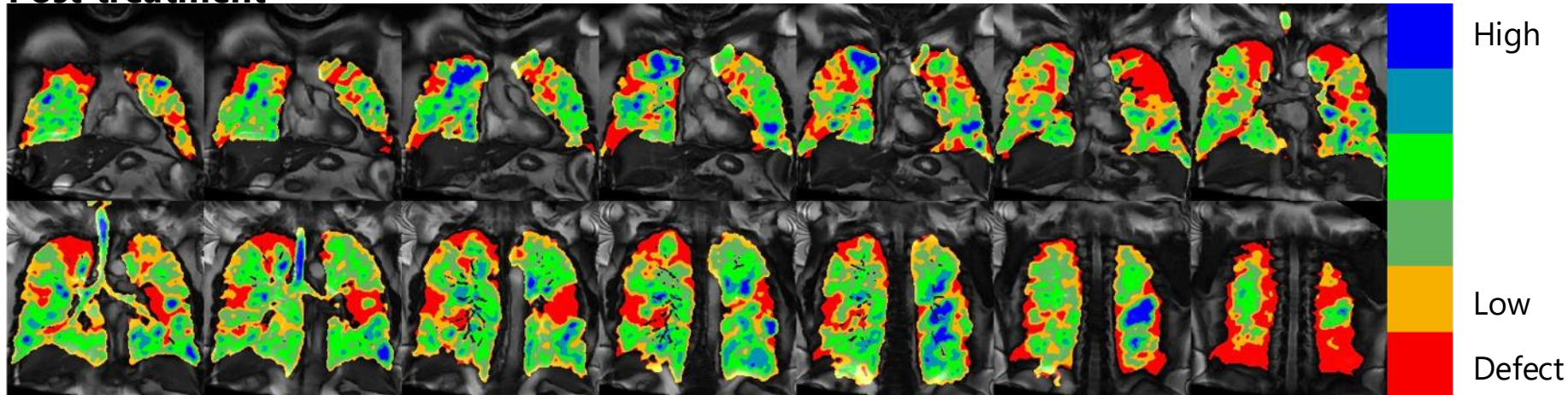
Pre

**34%**

Low

Defect

Post-treatment



High

**Ventilation Defect  
Percentage (VDP):**

Post

**19%**

Low

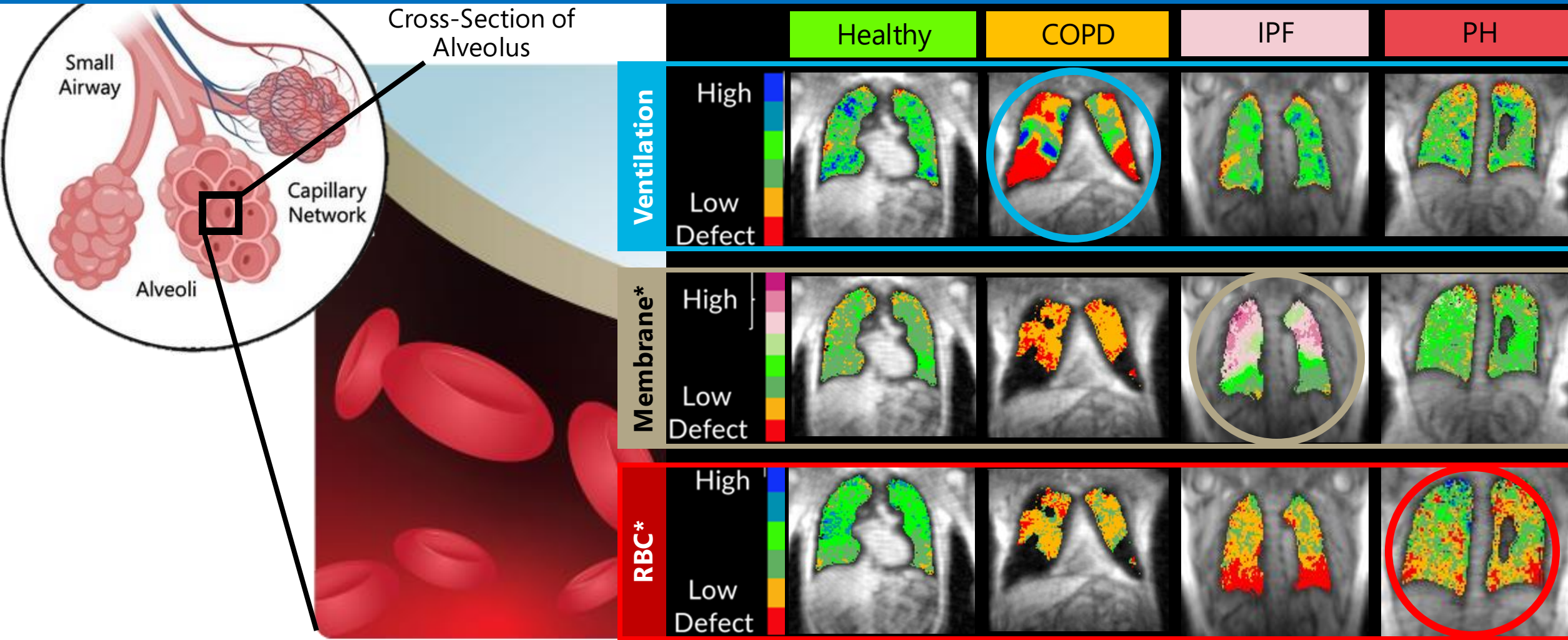
Defect

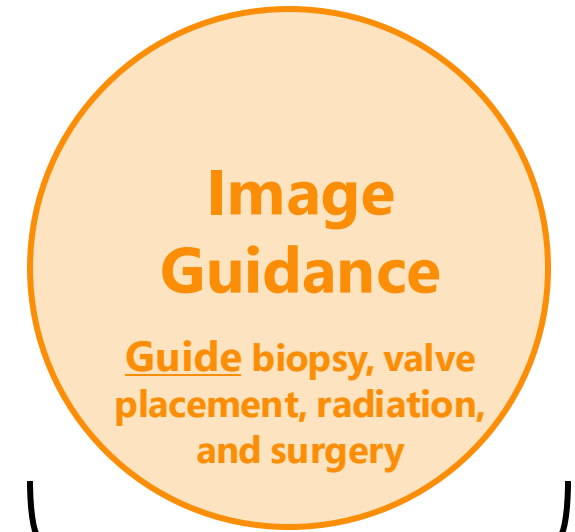


# Xenon MRI Value – See The Whole Picture



Uniquely suited to more precisely characterise multiple diseases





Examples

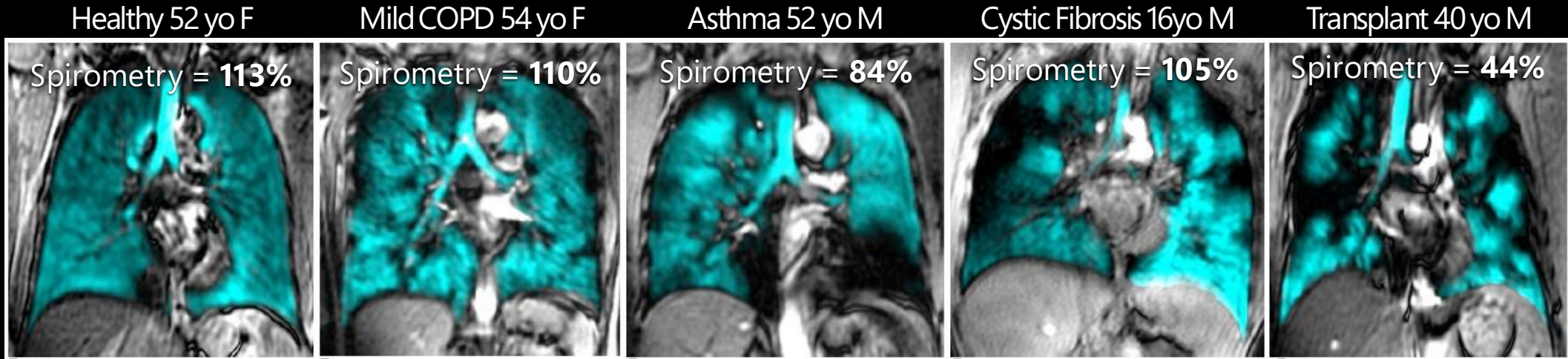
- **Airway**
  - ❖ Asthma
  - ❖ Bone Marrow Transplant
  - ❖ Bronchopulmonary Dysplasia
  - ❖ COPD
  - ❖ Cystic Fibrosis
  - ❖ Lung Transplant
- **Unexplained Breathlessness**

- **Tissue Disease**
  - ❖ Deployment-Related Resp Disease
  - ❖ Pulmonary Fibrosis
  - ❖ Long-COVID
- **Pulmonary Vascular**
  - ❖ Pulmonary Hypertension
- **Lung Cancer**
  - ❖ Surgical Oncology
  - ❖ Medical Oncology
  - ❖ Radiation Therapy

- **Airway**
  - ❖ COPD - Endobronchial valves
  - ❖ Biopsy Guidance
- **Lung Cancer**
  - ❖ Radiation Planning
  - ❖ Surgical Resection Planning

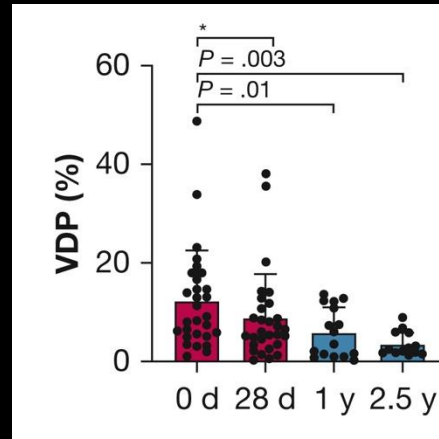
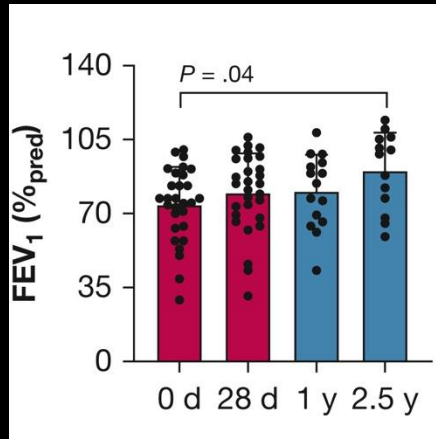
# Lung Airway Disease

## Characterisation

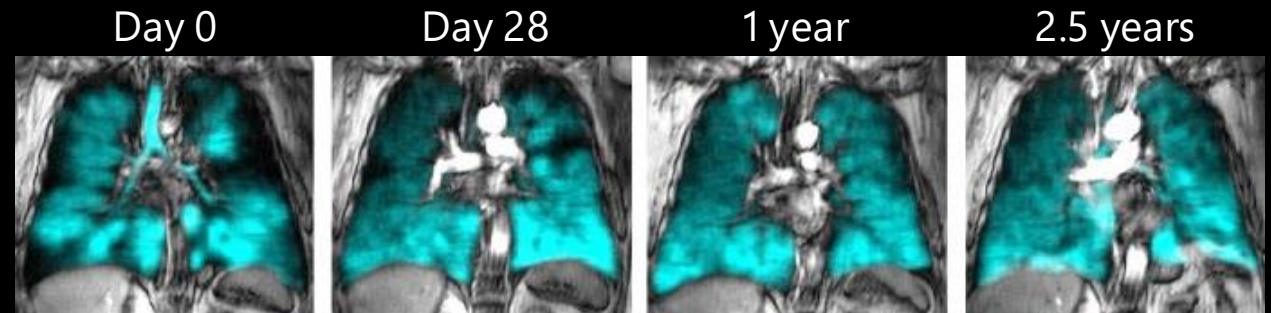


Svenningsen, McMaster University, unpublished data; used with permission

## Treatment Response



Predicted responders to Asthma Biologic, demonstrated response in as little as 28 days after initiation

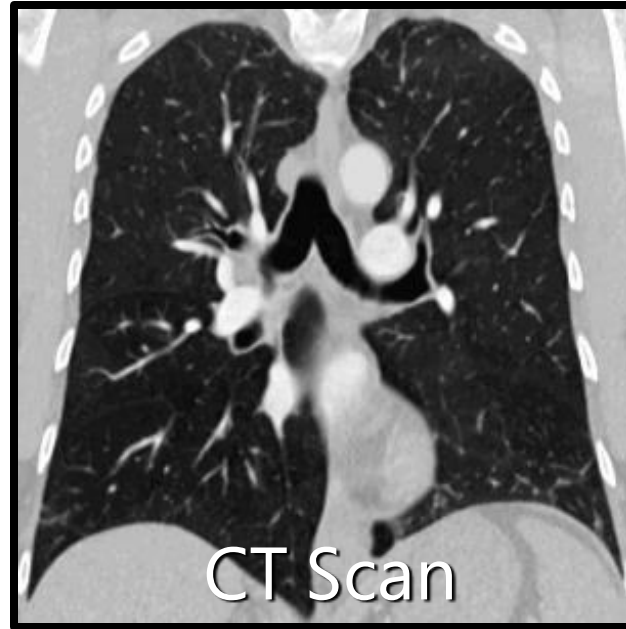
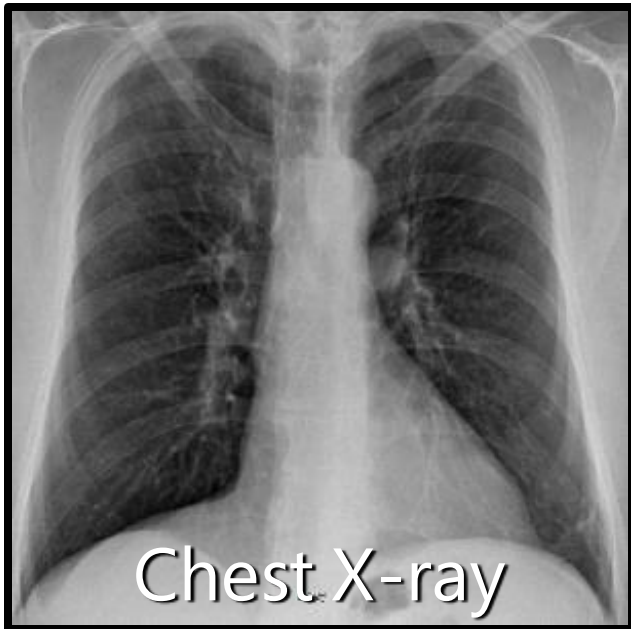


McIntosh, et al. *Chest*. 2023



# Unexplained Breathlessness

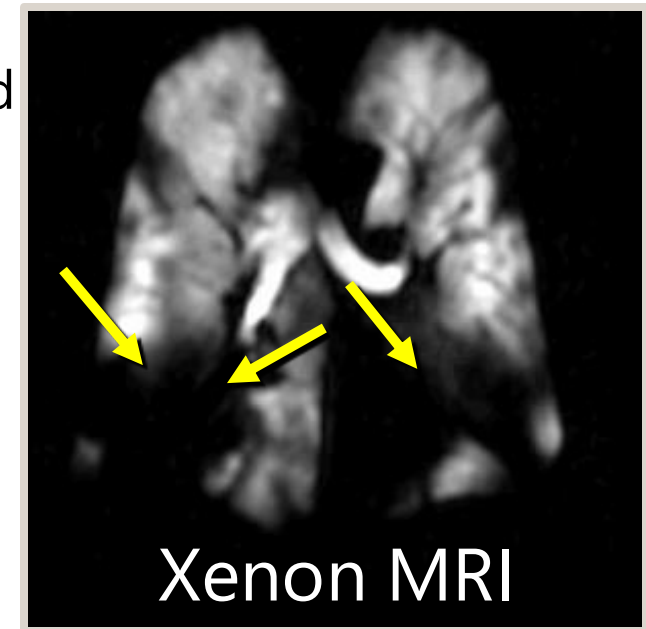
Xenon MRI provides additional information to guide treatment



Spirometry  
78%  
of Predicted

4 months  
later

Spirometry  
82%  
of Predicted



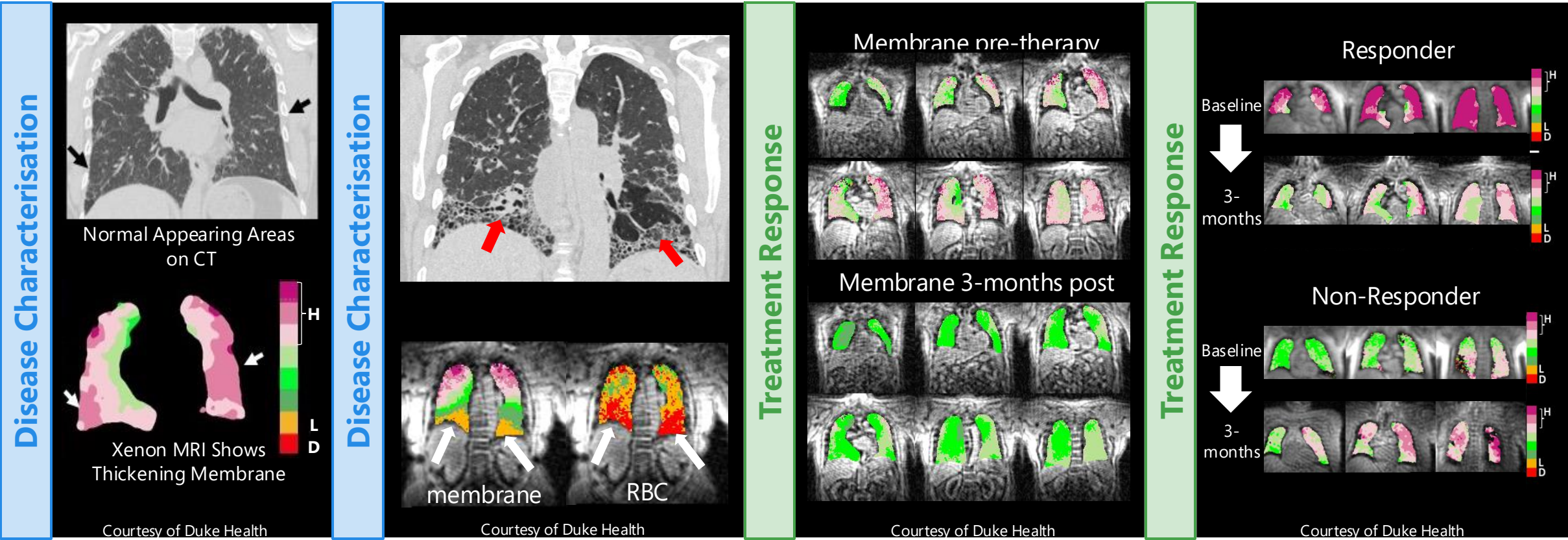
# Lung Tissue Disease\*

Allows disease characterisation and manage early active disease not explained by CT and/or Spirometry

Allows visualization changes in Interstitial Lung Disease

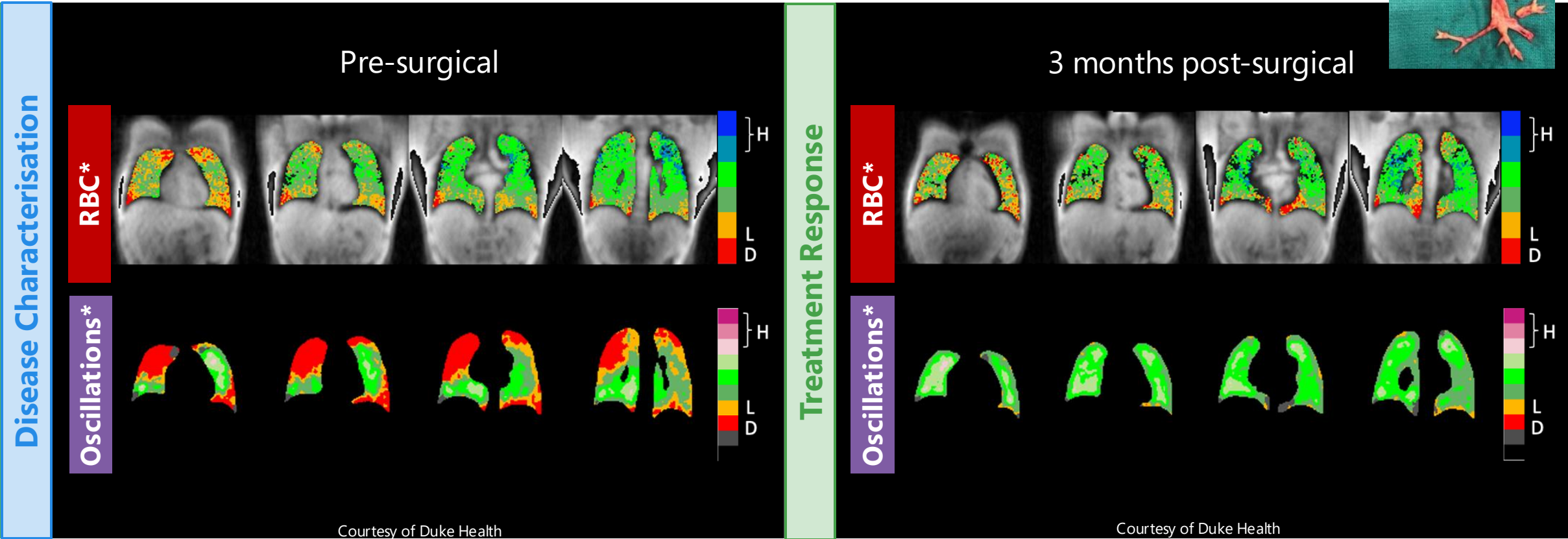
Allows monitoring and optimisation of Idiopathic Pulmonary Fibrosis antifibrotics

Potentially allows the prediction of disease response to antifibrotics



## Chronic Thromboembolic Pulmonary Hypertension

Patient underwent a Pulmonary Endarterectomy to remove organised blood clots





## Surgical Oncology

- Predict post-surgical lung function and guide resection decisions
- Assess regional recovery patterns compensation

## Radiation Oncology

- Functional lung avoidance Radiotherapy
- Earlier detection of radiation-induced lung injury

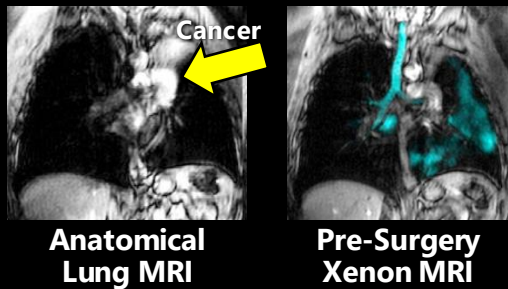
## Medical Oncology

- Assess baseline function to predict treatment tolerance/optimize meds
- Detect drug-induced lung toxicity before changes in CT

## Hematology Oncology

- Assess baseline function to diagnose bronchiolitis obliterans syndrome (BOS)
- Assess post-treatment function to determine evidence of BOS

### Image Guidance



62 yo female with no history of lung disease

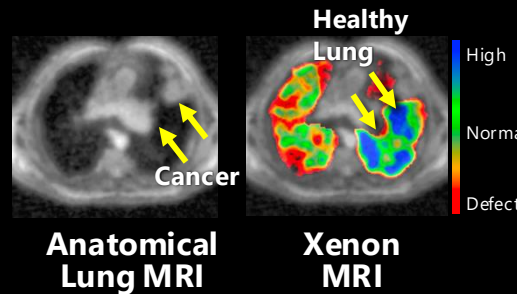
91% FEV1 | 1 % VDP

63 yo male with COPD

94% FEV1 | 19 % VDP ~9x higher risk

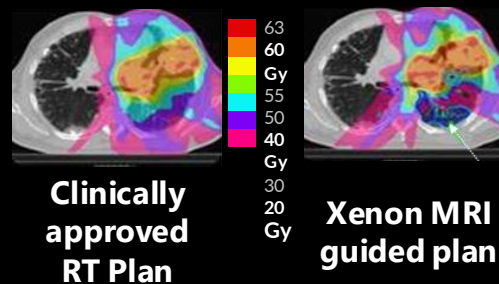
Courtesy of McMaster University

### Image Guidance



Anatomical Lung MRI

Xenon MRI

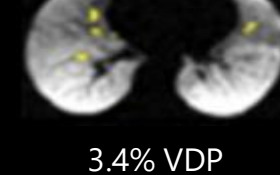


Rankine, et al. Int J Rad Onc Biol Phys (2021)

### Treatment Response

#### bleomycin-treated cancer survivors

41 yo female post-Chemo



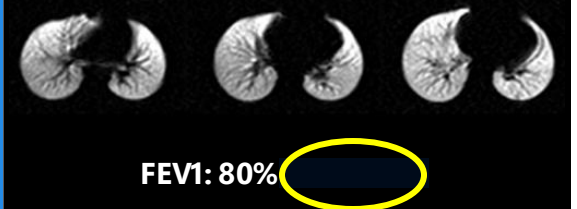
30 yo male post-Chemo



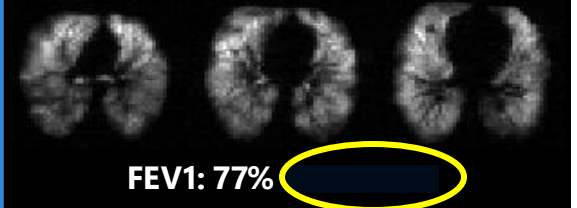
Bdaiwi, wt. al., JMIR 2025

### Disease Characterisation

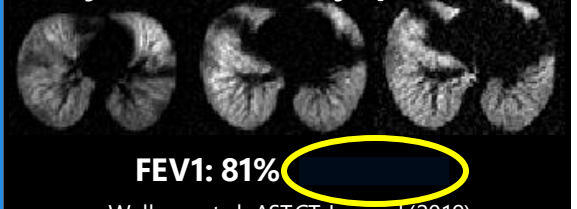
12 yo male 141 days post-BMT



13 yo female 331 days post-BMT



12 y.o. male 141 days post-BMT




Walkup, et al. ASTCT Journal (2019)


# Delayed Diagnosis: Losses Extend Beyond Time, Cost, and Health

The ONLY comprehensive solution providing a full picture in one 10-second exam

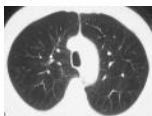
Structure (Large Airways)
Whole Lung Function
Regional Small Airway Ventilation
Gas Exchange*
Pulmonary-Vascular Hemodynamics*
Alveolar Microstructure*




Bronchoscopy




X-ray




CT



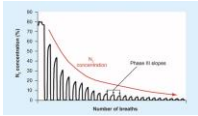
Stethoscope




Spirometry




FeNO



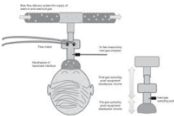
N<sub>2</sub> Washout




<sup>133</sup>Xe Scintigraphy




CT Parametric Modeling




MIGET



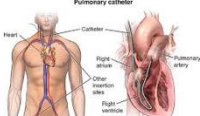
DLco



CPET

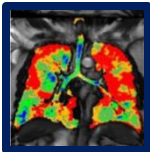


Echocardiogram

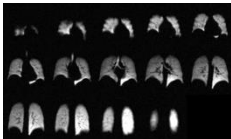


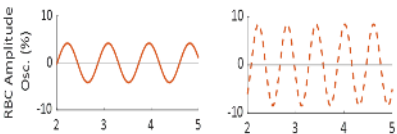
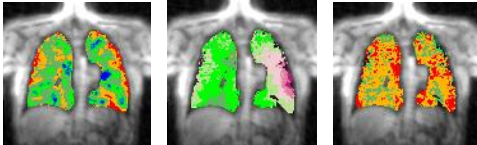
Right Heart Catheterisation

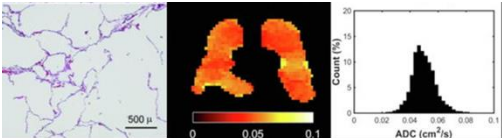
## Xenon MRI



Defect	19%	2.6±1.8%
Low	25%	17.5±5.7%
High	10%	16.7±3.3%
CV	0.55	0.37±0.04

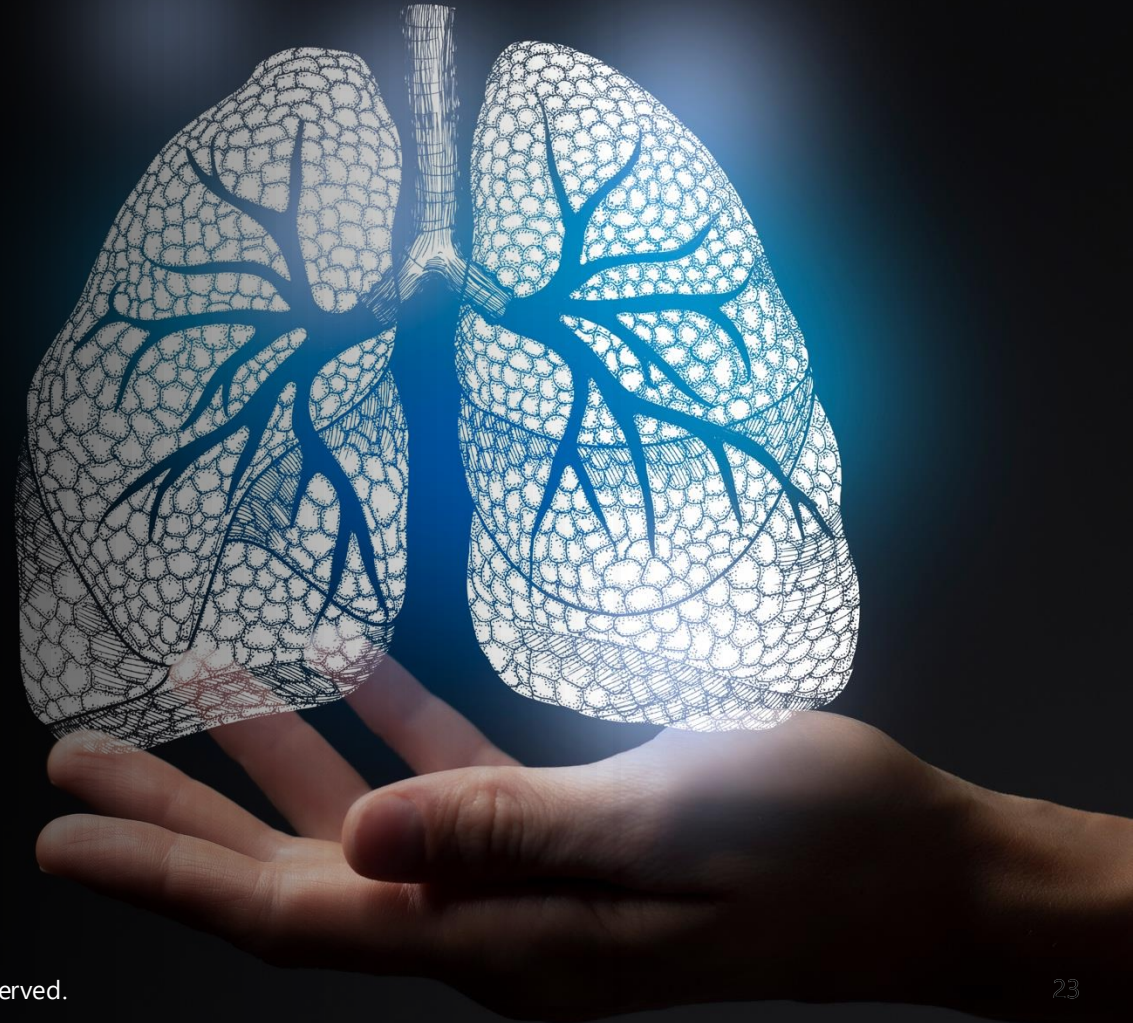






## Multiple entry points

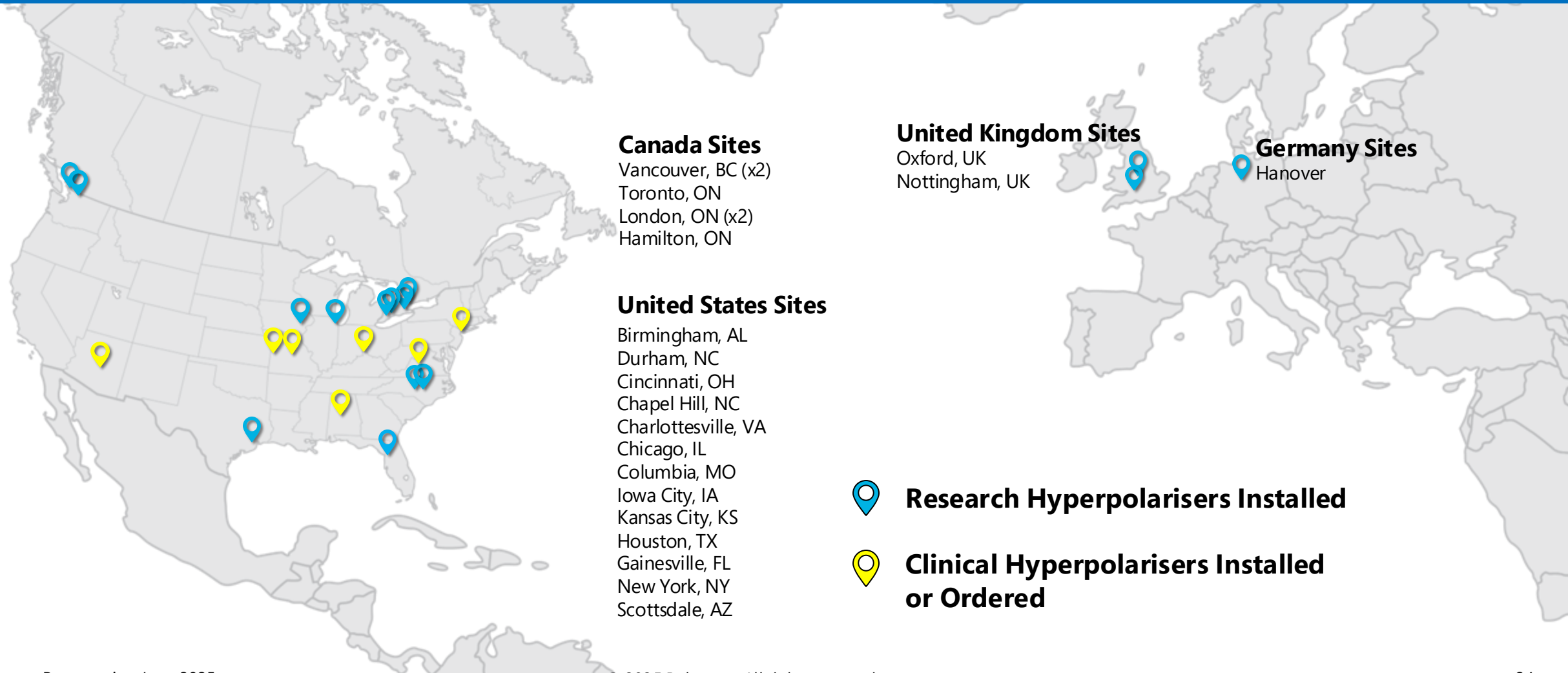
- Pulmonology
- Cardiology
- Hematology
- Immunology
- Interventional Pulmonology
- Lung Transplant Surgery
- Radiation Oncology
- Radiology





# 22 Xenon MRI Customers

Including leading academic medical centers



# 5-fold Strategy

Generating value and paving the path for success in 2025 and beyond



**Drive  
Utilisation**

**1**



**Grow  
User-Base**

**2**



**Broaden  
Reimbursement**

**3**



**Expand TAM**

**4**

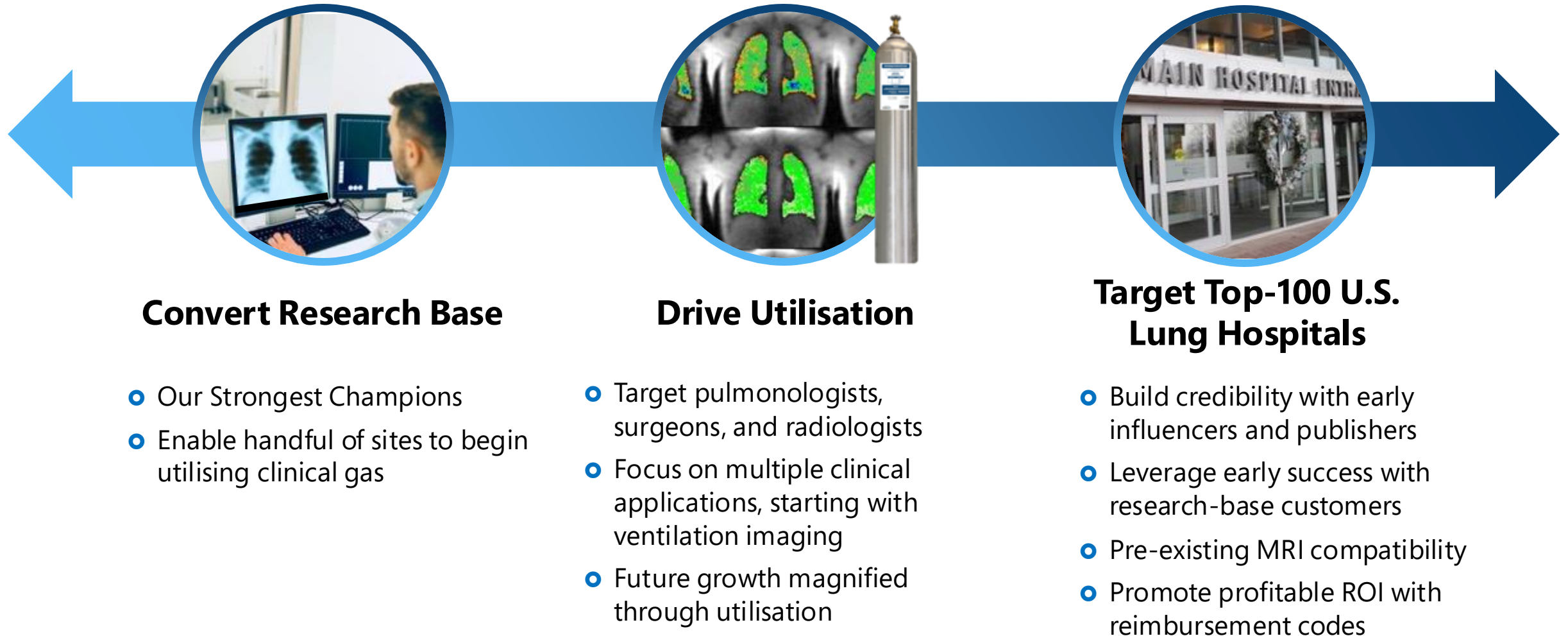


**Develop  
Partnerships**

**5**

# Commercialisation Strategy

## A three-pronged approach in market development phase





# Strong Economic and Clinical Incentive for Adopters



## Attractive reimbursement - 3 scans/week yields positive cash

- **US Healthcare Dynamics:**

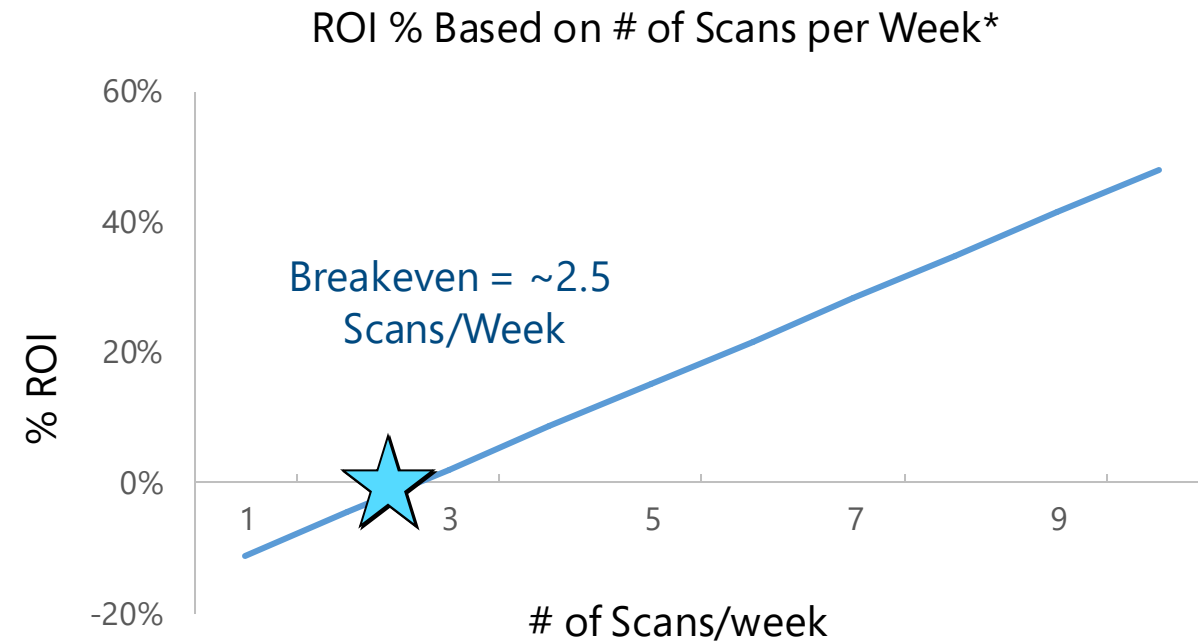
- Reimbursement drives technology adoption
- Payers include the US government (Medicare and Medicaid) and private insurers

- **Hospital Revenue Model:**

- Polarean reimbursement code offers incentive for additional hospital revenue while providing improved patient care
- Polarean reimbursement code enables return on investment (ROI) through covered scans and reduces financial risk

- **Polarean Opportunity:**

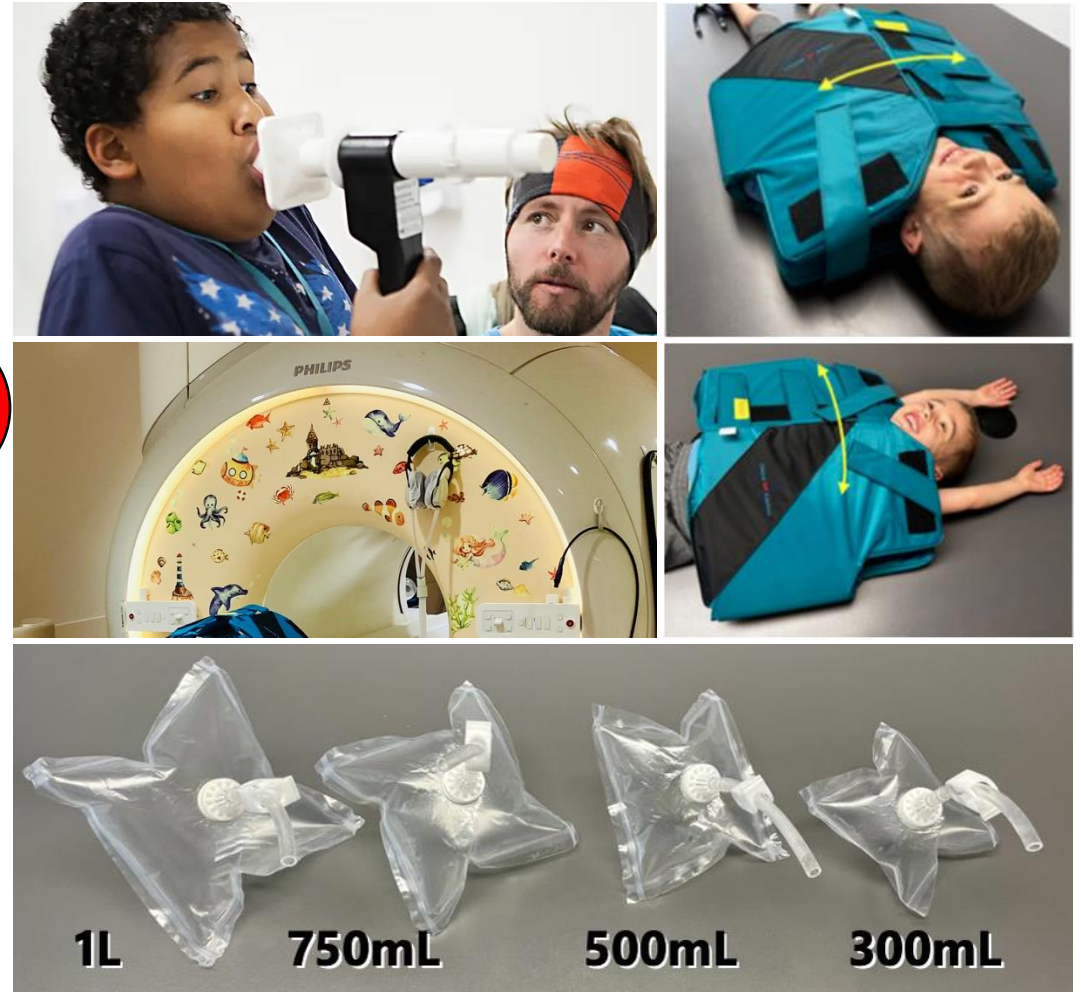
- Addresses a gap in functional lung imaging, enhancing diagnosis and care



# TAM Expansion - Paediatrics

## Focused on high-value market expansion products

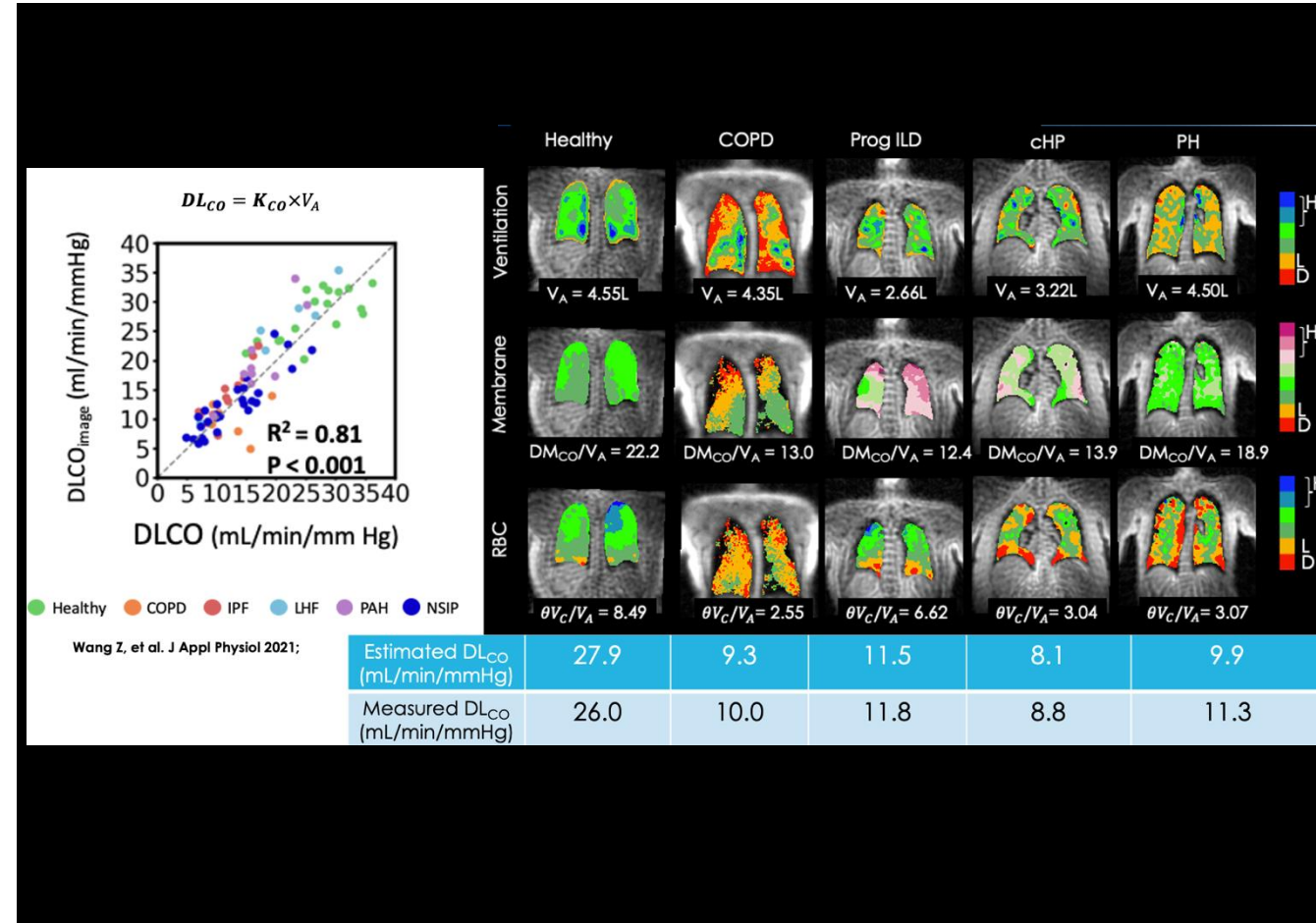
- Lowered On-Label Age from 12 to 6 Years
  - FDA approval June 2025
  - Launch Controlled Market Release in H2 2025
  - Benefits both children and providers
    - ✓ No radiation, enabling safe longitudinal imaging
    - ✓ Simpler and less effort-dependent than spirometry
    - ✓ No reference equations required
    - ✓ Visualises lung function to monitor progress and support compliance
    - ✓ Quantifies alveolar simplification in early childhood through adolescence
    - ✓ Gas exchange offers functional measurement of membrane conductance and RBC transfer



# Planned TAM Expansion\*

## Focused on high-value market expansion products

- Gas Exchange
  - De-risked product label expansion by leveraging current product/research
    - ✓ Addresses a significant unmet clinical need
    - ✓ Strong product safety profile
    - ✓ Positive FDA Feedback from Type B meeting
    - ✓ Extensive regulatory process experience
    - ✓ Secured hospital reimbursement
    - ✓ Over 10 years of research in gas exchange science with numerous publications
    - ✓ Proof-of-concept study conducted with 142 subjects † in addition to another ~100 subjects





## Polarean expansion into pharma-sponsored trials

- Strategic Partnership with VIDA
- Advancing Drug Development
  - Sensitive, non-invasive biomarkers potentially reduce sample sizes and accelerate time-to-market for new therapies
- Major Global Pharma Partner Selection
- Strengthening Market Position & Growth Strategy

### Xenon MRI

Key Revenue Verticals



### Pharma Companies Involved in Studies Using Xenon MRI Through Our Customers



# FY 2024 Financial Overview

## Strong Finish to the Year

- Revenue
  - Achieved 2024 Revenue of US \$3.1 m
  - >50% growth in consumables, 2024 vs 2023
- Expenses
  - Investing in commercialisation efforts
  - Tight control of cash operating expenses
- Cash
  - \$12.1m\* as of 31 December 2024, and no debt
  - Funds company through Q2 2026
- Strong Strategic Investment
  - Bracco Imaging
  - NUKEM Isotopes

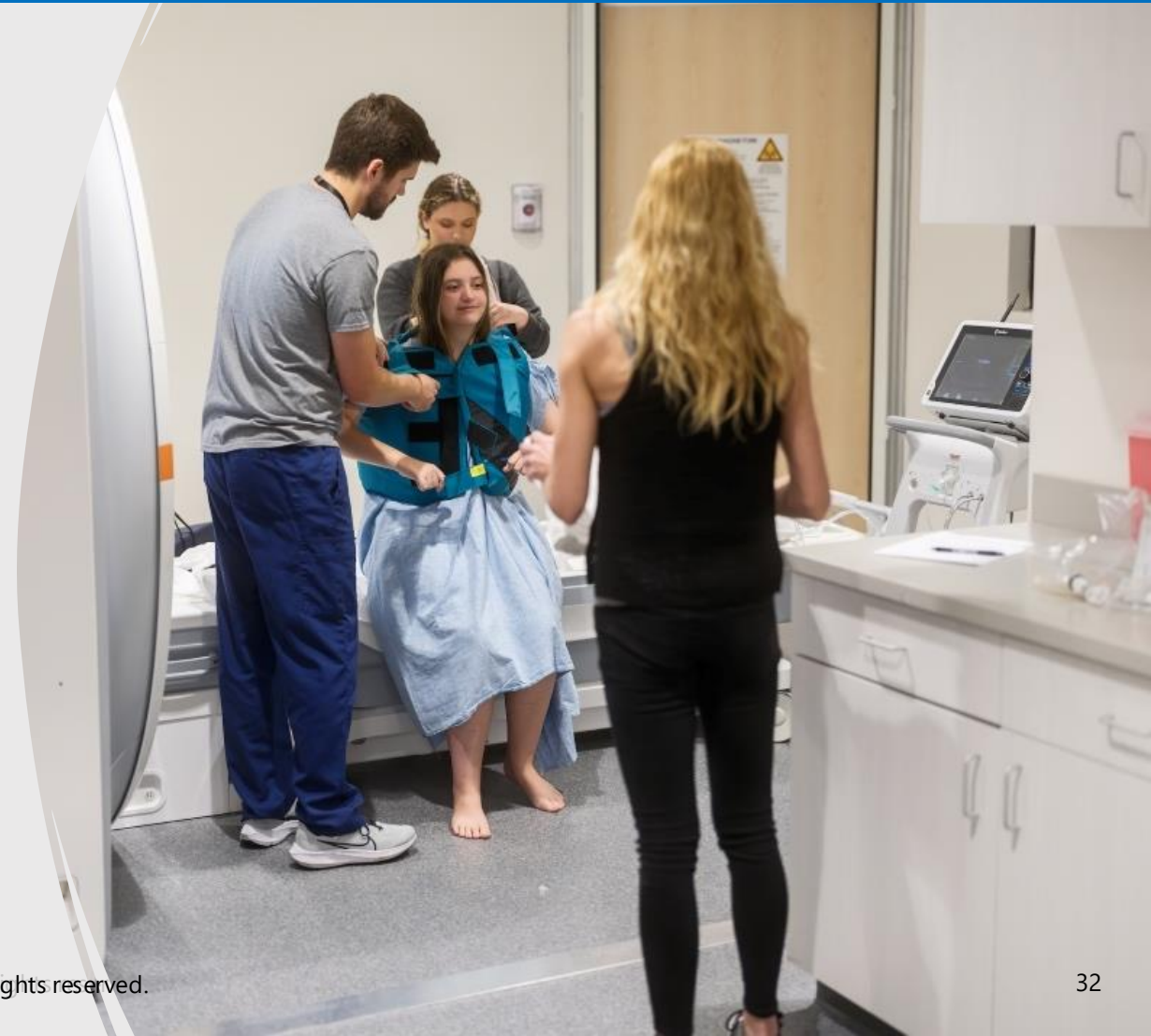
## Revenue Growth



# Why Invest in Polarean?

## Revolutionising pulmonary medicine through direct visualisation of lung function

- ✓ Game changing drug device imaging product that addresses growing global health problem
- ✓ Pioneering functional lung imaging platform with large total addressable market
- ✓ Clear patient impact and attractive reimbursement programme
- ✓ Fostering additional partnerships with medical device and pharma companies with significant growth potential





# Thank You!

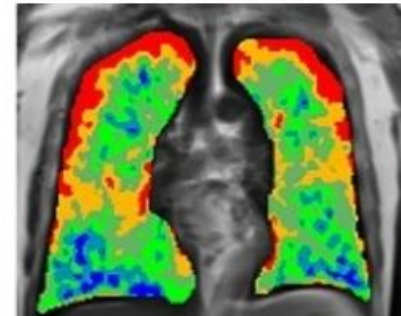
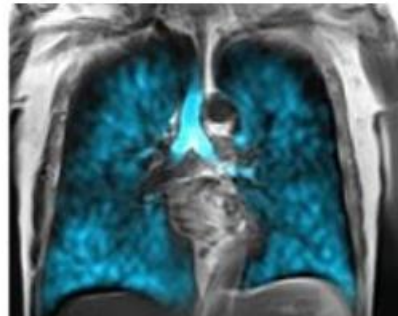
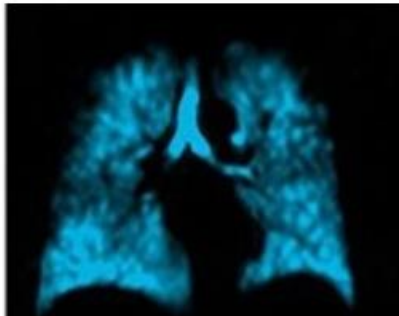
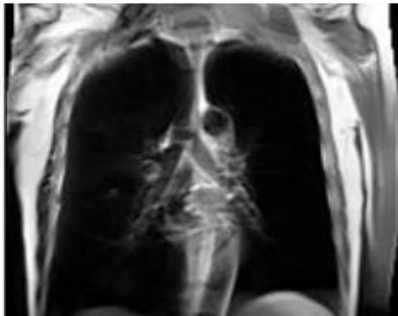
## Enquiries:



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## Optimise lung health and prevent avoidable loss by illuminating hidden disease

# Board of Directors

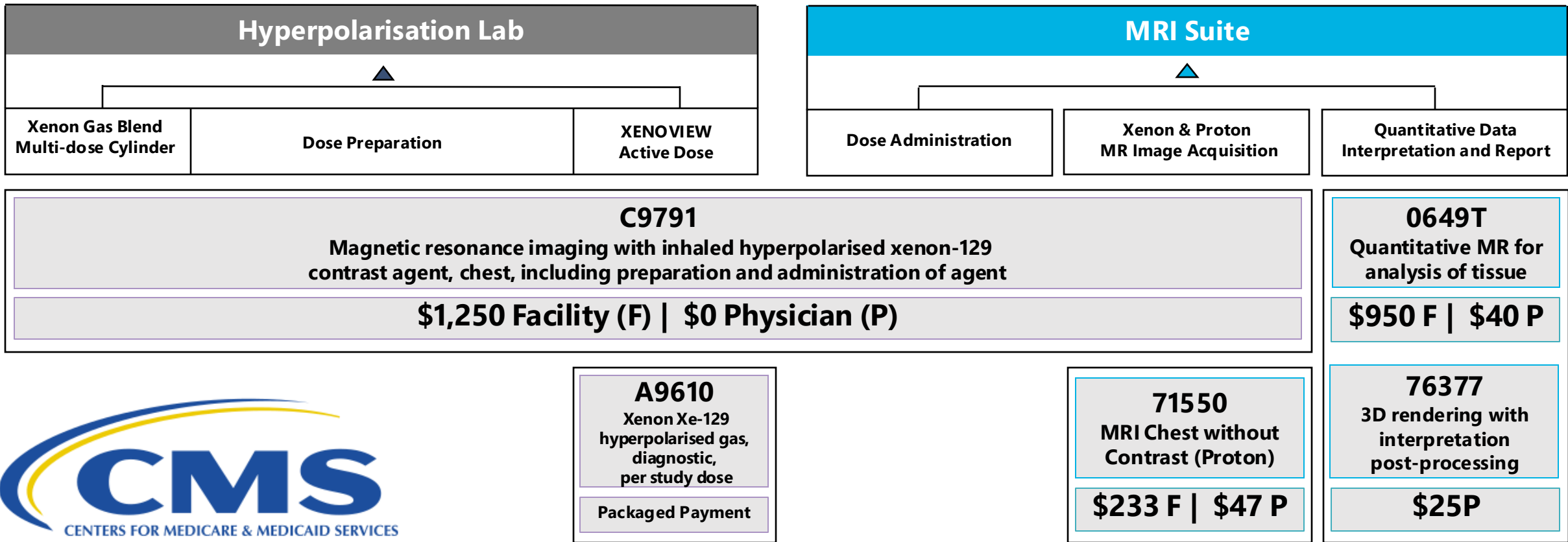
## Industry leaders with extensive industry and leadership experience

			Selected Prior Affiliations
	Ken West	Non-Executive Chairman Former Polarean CEO, serial entrepreneur	<b>POLAREAN EMBREX</b> <b>BIOLEX</b> THERAPEUTICS
	Dan Bague	Non-Executive Director Former CEO of Curium North America	<b>CURIUM</b> LIFE FORWARD <b>Mallinckrodt</b> Pharmaceuticals
	Jürgen Laucht	Non-Executive Director Former Managing Director of NUKEM Isotopes	<b>NUKEM</b> Isotopes
	Charles Osborne	CFO & Director	<b>innocrin</b> precision therapeutics <b>SCYNEXIS</b>
	Cyrille Petit	Non-Executive Director Chief Corporate Development Officer and Head of Strategic Initiatives, Bracco Group	<b>SmithNephew</b> <b>GE</b> <b>Goldman Sachs</b>
	Frank Schulkes	Non-Executive Director Chief Financial Officer, Distalmotion	<b>convatec</b> — forever caring — <b>GE Healthcare</b>
	Christopher von Jako, PhD	CEO & Director	<b>ST. JUDE MEDICAL</b> <b>NeuroTherm</b> <b>Medtronic</b> <b>INTEGRA</b> <b>COVIDIEN</b> <b>RADIONICS</b> LIMIT UNCERTAINTY Trusted Accuracy

# Established CMS Payment for Xenon MRI Workflow



Total Estimated Hospital Outpatient Facility Payment ≈\$2,500



The coding, coverage, and payment information contained herein is gathered from various resources and is subject to change without notice. Polarean cannot guarantee success in obtaining third-party insurance payments. Third-party payment for medical products and services is affected by numerous factors. It is always the provider's responsibility to determine and submit appropriate codes, charges, and modifiers for services that are rendered. Providers should contact their third-party payers for specific information on their coding, coverage, and payment policies.