

Revolutionising Pulmonary Medicine

Polarean Imaging plc.
AIM: POLX
January 2024

POLAREAN



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Polarean Senior Management Team



Successful, experienced healthcare professionals

 Christopher von Jako, PhD Chief Executive Officer	<ul style="list-style-type: none">• Joined in June 2023• 30+ years of global executive leadership experience in MedTech with a primary focus on capital image guidance equipment• Led organisations in early-stage, expansion, and turnaround environments with five entities resulting in M&A
 Charles Osborne Chief Financial Officer	<ul style="list-style-type: none">• Joined in 2019• 30+ years of global life sciences experience, 20+ years as CFO• Extensive public company, corporate partnering, and M&A experience
 Alex Dusek Chief Commercial Officer	<ul style="list-style-type: none">• Joined in 2019• 25+ years of global executive commercial leadership in Pharma, Biotech, and MedTech• Led global pulmonary pharma product launches
 Bastiaan Driehuys, PhD Chief Scientific Officer & Founder	<ul style="list-style-type: none">• Joined in 2012• A Polarean founder and technology founder with over 100 peer-reviewed articles on hyperpolarised gases and holds over 30 patents in this area• Professor in the Department of Radiology at Duke University

Selected Prior Company Affiliations



Investment Highlights



The leader in Pulmonary Functional Imaging

Pioneering Functional Imaging Platform

Noninvasive, radiation-free technology with an attractive per patient consumable revenue model

Large Market with Unmet Clinical Need

\$2B+ U.S. total addressable market (TAM) opportunity in obstructive lung disease

Massive Label Expansion Market

\$3B+ U.S. TAM opportunity in interstitial lung and pulmonary vascular disease

Industry Partnerships

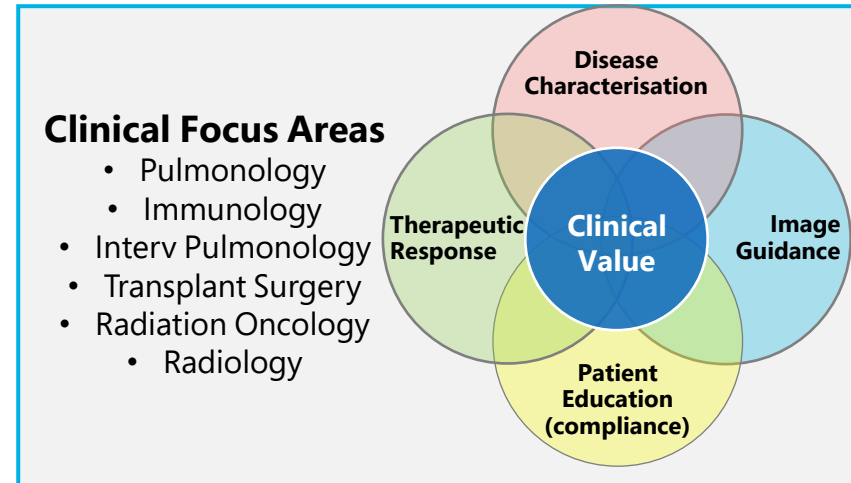
Pharma and MedTech represent a multi-faceted growth avenue

The POLAREAN logo is centered over a large, light blue, stylized graphic of human lungs. The logo itself consists of the word "POLAREAN" in a bold, black, sans-serif font, with the "O" featuring a blue and white circular graphic element.

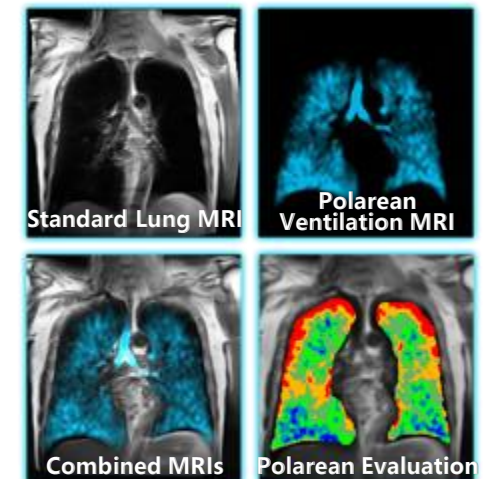
Revolutionising Pulmonary Medicine

Commercial-stage MedTech company

- Driving a Vision and Building Value
 - FDA-approved, first-in-class, radiation-free, diagnostic pharmaceutical agent enables visualisation and better diagnosis of lung function
 - Facilitates the **right treatment** for the **right patient** at the **right time**
- Initial Market Focus -> Lung Ventilation
 - Regional visual evaluation/quantitative measure of lung ventilation for patients 11 years+
 - 17 total global installed sites
 - Positive hospital procedural economics with established reimbursement codes
- Planned FDA Label Expansion -> Gas Exchange
 - Regional evaluation and visualisation of pulmonary gas exchange
 - De-risked product label expansion
 - Initial FDA approval provided product safety, regulatory process, hospital reimbursement, and clinical need
 - The science of gas exchange has been worked on for 10+ years with numerous publications



The Polarean Difference



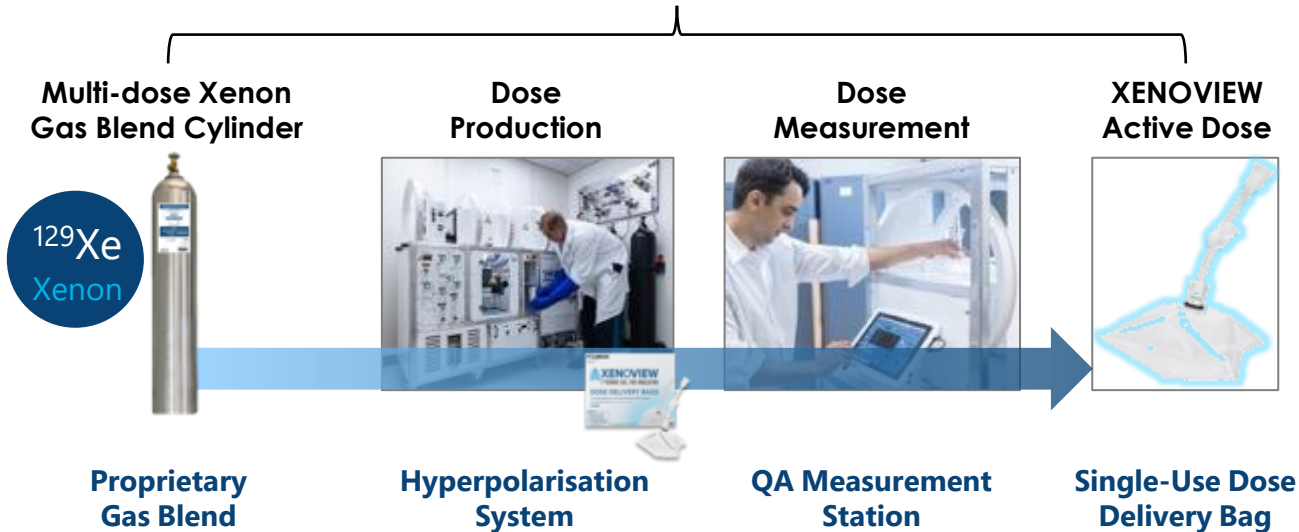
XENOVIEW™ Technology Platform

POLAREAN

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

Polarean offers the Gas, Production and Quality Assurance Devices, and Single-use Dose Bags to administer XENOVIEW

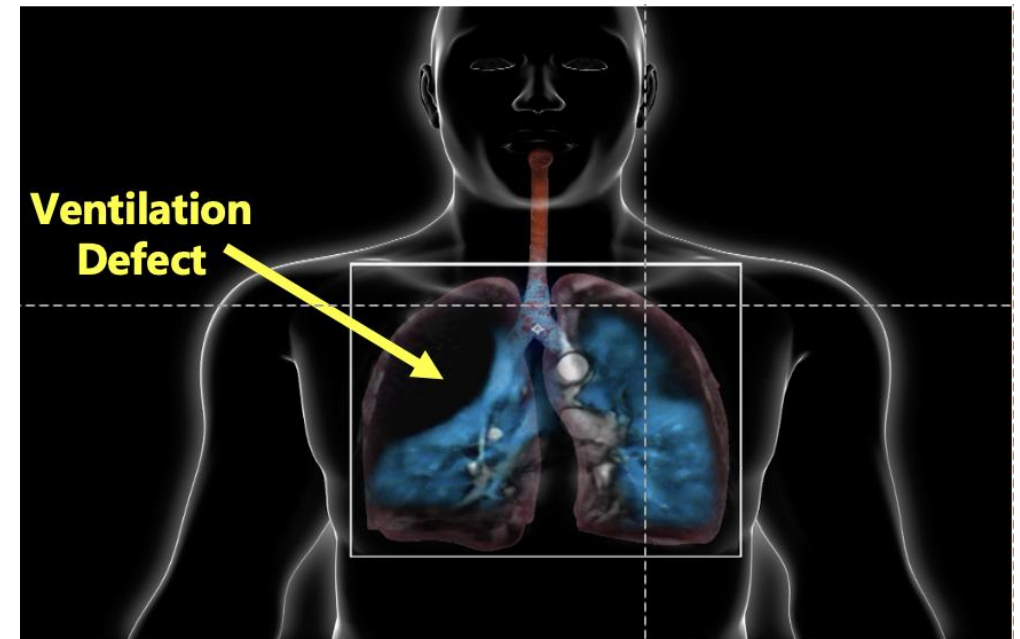
Hospital Hyperpolarisation Lab



XENOVIEW Indication

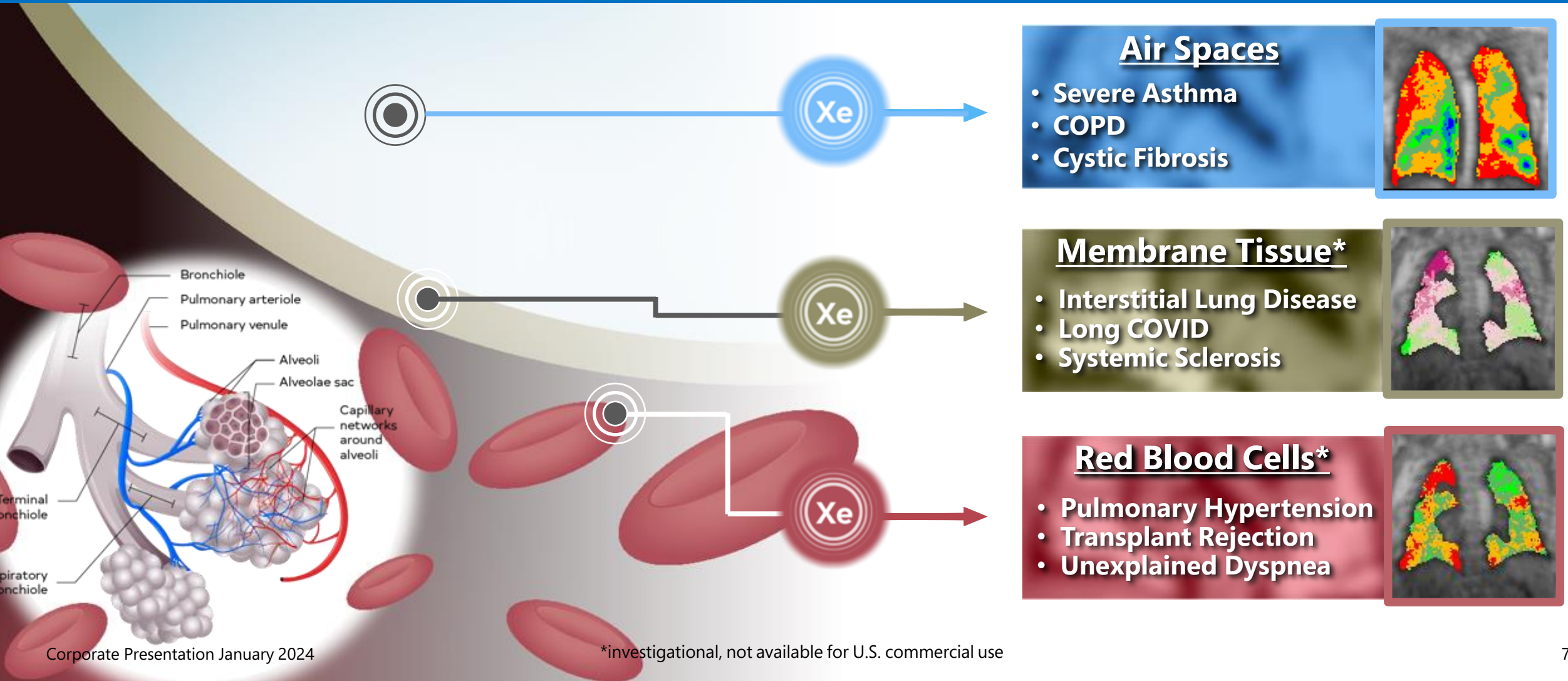
Prepared from the Xenon Xe 129 Gas Blend, is a hyperpolarised contrast agent indicated for use with MRI for evaluation of lung ventilation in adults and paediatric patients aged 12yr years & older. XENOVIEW has not been evaluated for use with lung perfusion imaging.

XENOVIEW™
(xenon Xe 129 hyperpolarized) for oral inhalation
Hospital MRI Suite




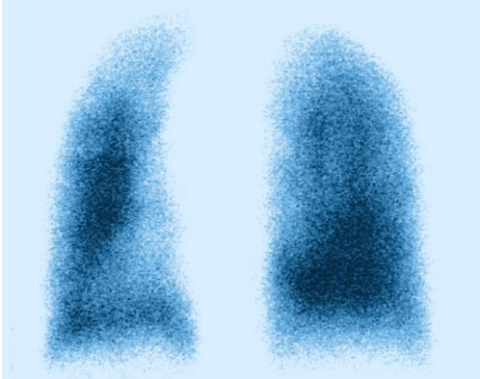
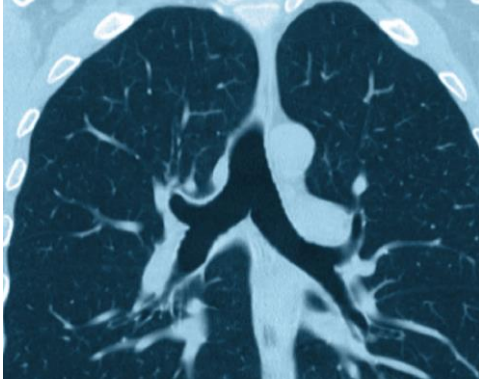
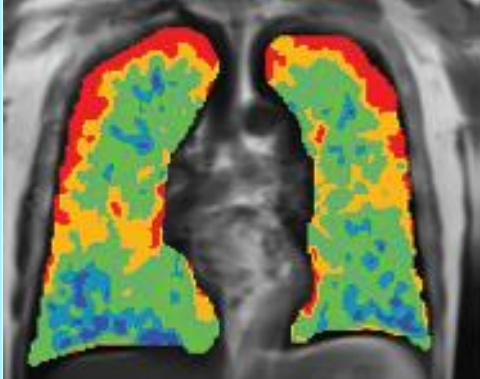
Three Compartment Gas Exchange Visualisation

XENOVUE MRI can more precisely characterise multiple diseases



Overview and Limitations of Existing Technologies

Improved Patient Decision-Making for Lung Disease

	 <p>Today's standard lung function test</p>			
	Spirometry Developed in 1846 15m US procedures/yr.	Scintigraphy Developed in 1964 250k Total US procedures/yr.	CT Scan Developed in 1971 10m Total US procedures/yr.	Polarean XENOVIE™ MRI FDA Approved December 2022
Functional Measure?	YES, Global Only	YES, Global Only	NO	YES
Regional Visualisation?	NO	YES, 2D	YES, 3D Structure Only	YES, 3D
Radiation-free Procedure?	YES	NO	NO	YES
Patient Effort Independence?	NO	YES	YES	YES
Other Limitations?	Variability, Lacks Precision	Resolution	Resolution	Current Footprint

Substantial Unmet Need in Obstructive Lung Disease POLAREAN


\$2B+ TAM enables 3D Quantitative Ventilation Visualisation

42 MILLION


People in the U.S. living with obstructive lung disease

Constriction or blockage of the airways, resulting in restricted airflow and causing challenges in breathing.


- Asthma
- COPD
- Cystic Fibrosis




In the U.S.
¼ of all ER visits
are related to Asthma



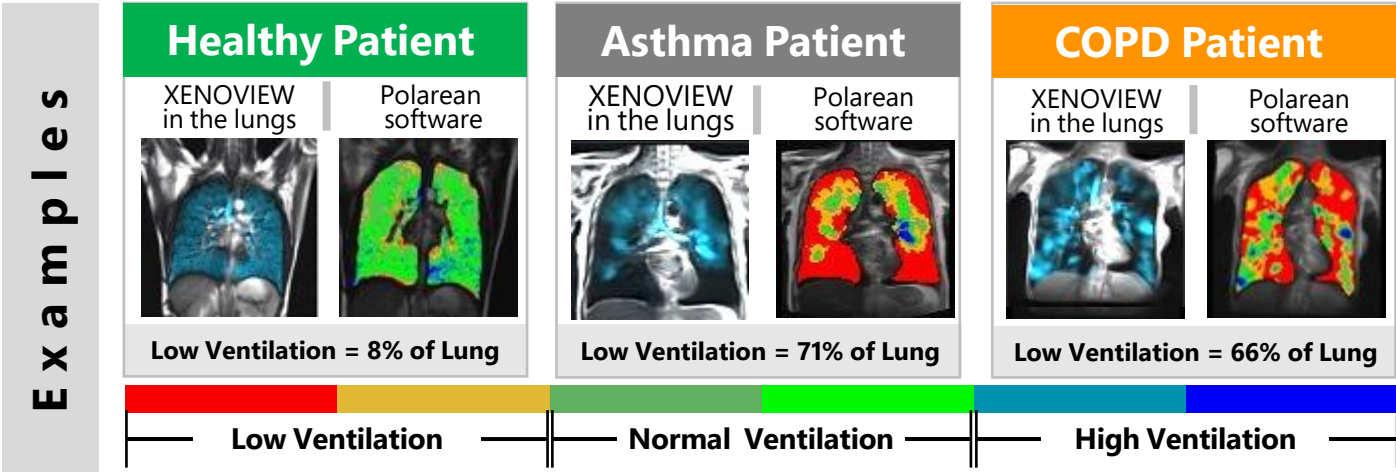
U.S. economic burden
of Asthma and COPD
>\$125 billion/yr



COPD is the
3rd leading
cause of death
worldwide



Pulmonary
Exacerbation Costs
in Cystic Fibrosis
>\$75,000 per episode



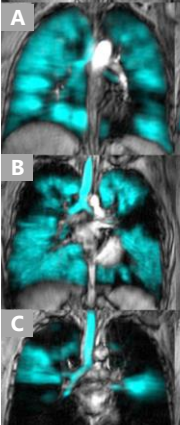
Therapeutic Response

Patient A: Asthmatic Biologic Therapy


Patient B: Asthmatic Bronchial Thermoplasty

Patient C: Asthmatic Corticosteroid Therapy

Pre-Treatment



Post-Treatment

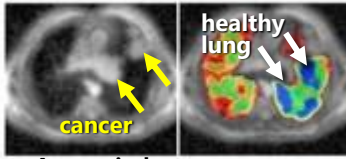


Quantify regional changes in ventilation which may aid in the decision to continue, modify, or discontinue the treatment regiment

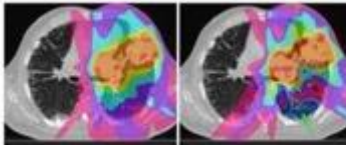
Image Guidance

Radiation Avoidance Therapy

The right lower lobe should be spared from radiation therapy (RT) via a planning approach for this lung cancer patient



Anatomical Lung MRI XENOVUE MRI



Clinically Approved RT Plan XENOVUE-Guided RT Plan

First Clinical Functional MRI scan of the Lung

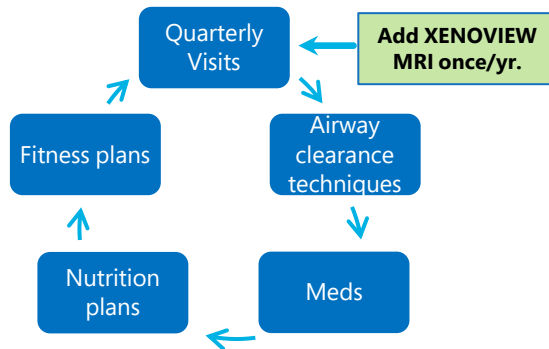
XENOVIEW makes a life changing impact

- 19-year-old Cystic Fibrosis (CF) patient with a spirometry measure (FEV1) = 111% of predicted (considered excellent lung function)
- XENOVIEW MRI presents a different story with a Ventilation Defect % = 21%
- This abnormal indication is clear to the patient/physician that High-Frequency Chest Oscillation Vest therapy is still needed and vital

CF patient care pathway



Treatment Combinations



Examples of Airway Clearance Techniques



Manual Chest Physiotherapy



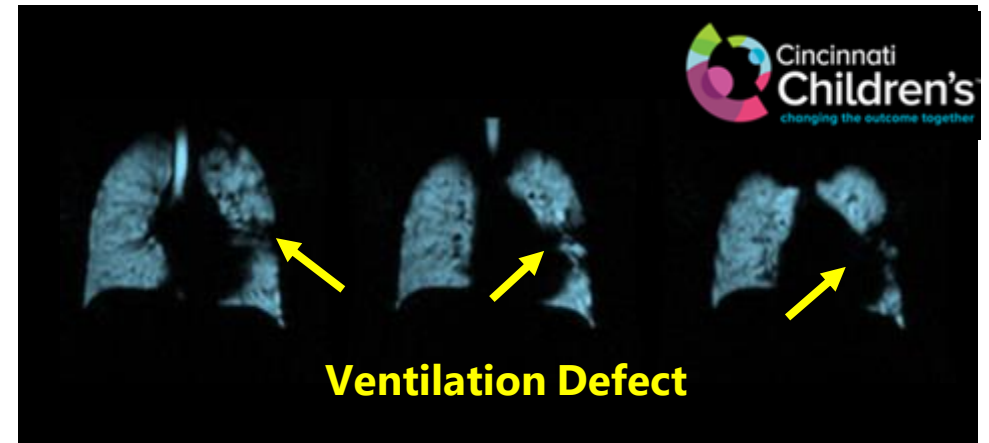
HF Chest Oscillation



Cough & Huffing



Active Cycle of Breathing Technique



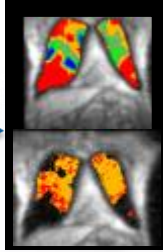
Gas Exchange* FDA Label Expansion

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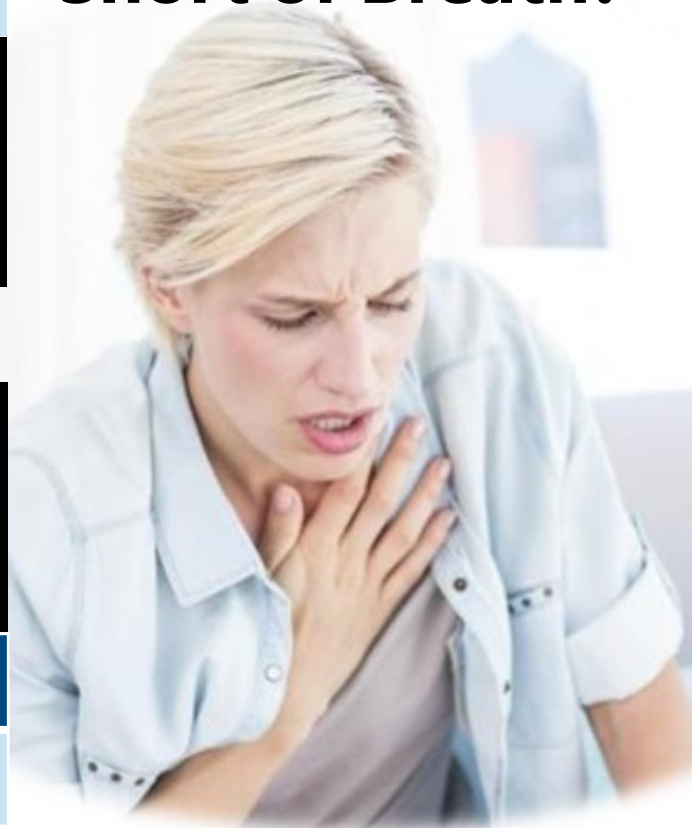
Unlocks \$3B+ U.S. TAM opportunity in interstitial lung & pulmonary vascular disease

Unexplained Dyspnea

> 3,500,000 U.S. Patients

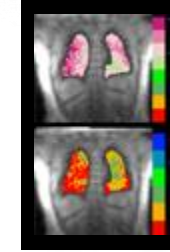


**“Why am I
Short of Breath?”**



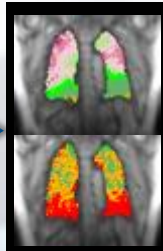
Long-COVID

> 10,000,000 Patients



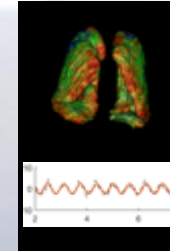
Interstitial Lung Disease

> 500,000 Patients



Pulmonary Hypertension

> 700,000 Patients



Comprehensive, Quantitative, Regional Lung Function POLAREAN

ONLY Solution to provide the Full Picture in One 10-second exam

Assess:



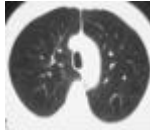
Structure
(Large Airways)



Bronchoscopy



X-ray



CT



Traditional MRI

Polarean
XENOVUE MRI

Whole Lung Function



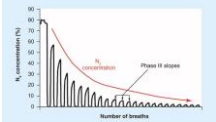
Stethoscope



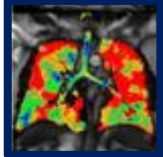
Spirometry



FeNO



N₂ Washout



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

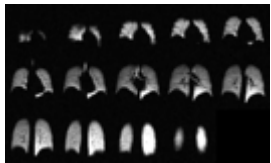
Regional Small
Airway Ventilation



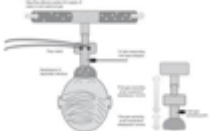
¹³³Xe Scintigraphy



CT Parametric Modeling



Gas Exchange*



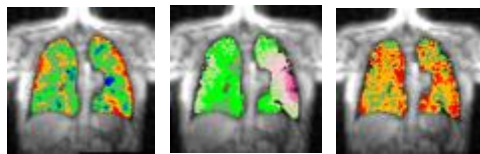
MIGET



DLCO



CPET



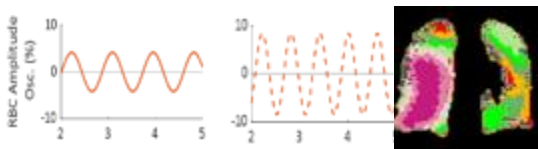
Pulmonary-Vascular
Hemodynamics*



ECG



RHC



Clinician and Industry Validation

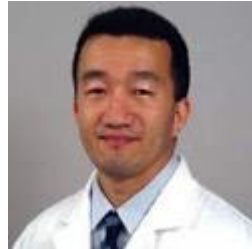


Dr. Jason Woods



"This is the cutting edge of lung imaging technology. We're in the middle of the renaissance medically in the lung. And imaging of gas exchange is one of the most exciting future technologies as it allows us to visualise and quantify the gas ... it is a completely a new level of precision determining **thromboembolic and cardiovascular disease abnormalities**"

"The Polarean technology will be critical in informing and/or changing our treatment decisions. We will use it to detect and quantify airway obstruction **difficult Asthma cases** and guide chronic bronchodilator, steroid, and biological **therapeutic decision-making**."



Dr. Mike Shim

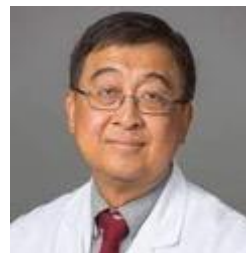


Dr. Erik Hysinger



"I am a big fan of this technology! There's a real opportunity to understand lung physiology and mechanics, and **early detection of lung disease**"

"XENOVUE™ is a much-needed clinical test that fills the current clinical gaps for the diagnosis and management of pulmonary diseases. One of the largest is **dyspnea on exertion**. It is one of the most common causes for referrals to pulmonary clinics."



Dr. Tony Huang



Dr. Fergus Gleeson



"**Long-COVID** represents a major challenge to diagnose. This can **uncover hidden damage not seen by CT scans**. There are now important questions to answer, such as, how many patients with long-Covid will have abnormal scans, the significance of the abnormality we've detected, the cause of the abnormality, and its longer-term consequences. Once we understand the mechanisms driving these symptoms, we will be better placed to develop more effective treatments."



Dr. Chase Hall



"A remarkable feature is the technology signifies lung tissue that is at risk of **progression in ILD**. It usually takes 100s of patients over a year to demonstrate a change. You can see that **within 3 months** in an individual patient and see response to treatment. For early-stage drug trials, there is a huge advantage to see whether an individual drug has potential in an individual population. Instead of \$500m on a stage 3 clinical trial, a **Pharma Companies** can spend a few million."

MedTech Partners



Pharma Sponsored Trials



Building Value through Strong Fundamentals



Platform supported by regulatory, evidence, reimbursement, and robust IP



Regulatory Experience

- First and only US FDA approval for Xenon MRI
- Three additional US 510(k)s clearances
- New Chemical Entity designation with a five-year market exclusivity period – through 2027
- Discussions ongoing for expanding min age from 12 to 6 yo, and the Gas Exchange label expansion



Robust Reimbursement Codes

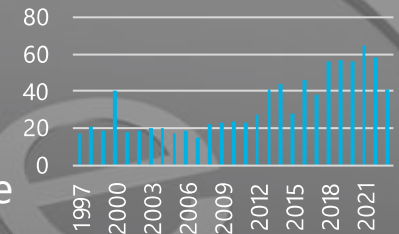
- One newly established C-code for the current and future Polarean XENOVUE procedures
- Three well-established MRI codes for professional and facility



Growing Clinical Validation

- Two Phase-3 clinical trials
- 950+ Xenon 129 MRI published manuscripts
- Planning third Phase-3 clinical trial for Gas Exchange

Publications By Year



Extensive Patent Coverage

- Key IP portfolio areas extend coverage to 2035+, areas include:
 - Hyperpolarisation method
 - Imaging methods
 - RF coil designs

20
granted

6
pending

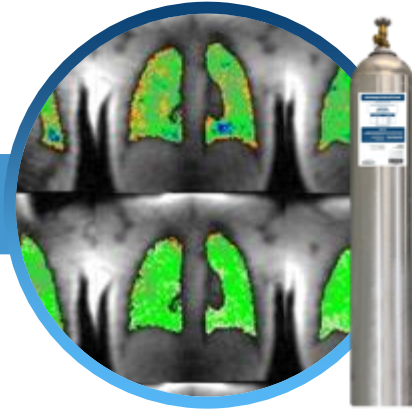
Commercialisation Strategy

A three-pronged approach in market development phase



Convert Research Base

- Our Strongest Champions
- Enable handful of sites to begin utilising clinical gas



Drive Utilisation

- Pulmonologists, surgeons, and radiologists are Key Targets
- Multiple Clinical Applications exist for our beachhead in ventilation imaging
- Future growth magnified through utilisation



Target Top-100 U.S. Pulmonary Hospitals

- Build credibility with early influencers / publishers
- Leverage early success with research base customers
- Pre-existing MRI compatibility
- Promote updated ROI with new reimbursement codes

Strong Economic and Clinical Incentive for Adopters



3-patients/week yields positive cash for strong ROI

Hospital Hyperpolarisation Lab



Multi-dose Xenon
Gas Blend Cylinder



NDC# 80534-6350-1

Dose Production



Dose
Measurement



XENOVUE
Active Dose



NDC# 80534-1000-1

← New Xenon 129 Specific Code →

New Code C9791, became effective October 1, 2023
"Magnetic resonance imaging with inhaled hyperpolarized xenon-129
contrast agent, chest, including preparation and administration of agent"

Hospital MRI Suite



Dosing

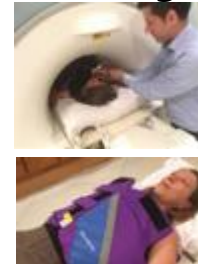


Image Acquisition



Image Analysis



← Existing Procedure Codes →

Code 71550
"Proton MRI Chest
without Contrast"

Code 0649T
"MRI Quantitative
Interpretation"

Code 76377
"3D rendering w interpret & reporting of MRI"

Development of Key Industry Partnerships

Pharma

XENOVIEW MRI can Accelerate Drug Development and Save Pharmaceutical companies Time and Money

- 58% of Respiratory Drug Trials Fail at the Final Stage of Drug Development
- Lung is the #1 most expensive clinical trial category
 - \$985M average Research and Development costs for a novel drug
- Multiple Academic Trials are Ongoing Exploring Xenon MRI as a measure of Drug Effectiveness in several therapeutic applications:
 - Asthma, COPD, Cystic Fibrosis, ILD, Pulmonary hypertension
- XENOVIEW MRI can facilitate respiratory drug development
 - Less variability in the measure leads to lower sample sizes required to observe treatment effect
 - It allows the visualisation and quantification of lung function not visible using other technologies to aid in early product characterisation and differentiation

MedTech

XENOVIEW MRI Message is Amplified Through Shared Value Proposition in Philips Radiology Customers



Software

XENOVIEW Imaging Platform to be Strengthened with VIDA Expertise and Creation of Harmonised Multisite Trial Network



Investment Highlights



Improving the paradigm in pulmonary medicine

Robust Functional Lung MRI Platform with Established Reimbursement for the per Patient Consumable

Significant Unmet Need in Obstructive Lung Disease

Sizeable Underserved Market in Pulmonary and Cardio-pulmonary Applications

Industry Partnerships Yield Additional Revenue Streams and OpEx Efficiencies

POLAREAN

Clear patient impact and customer economic benefit

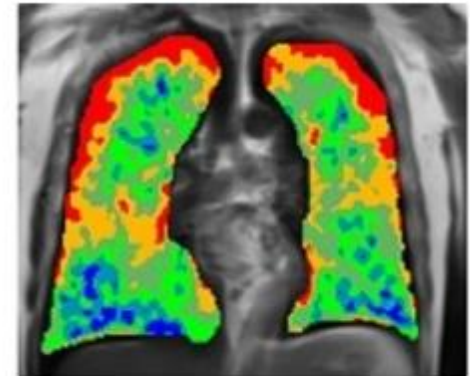
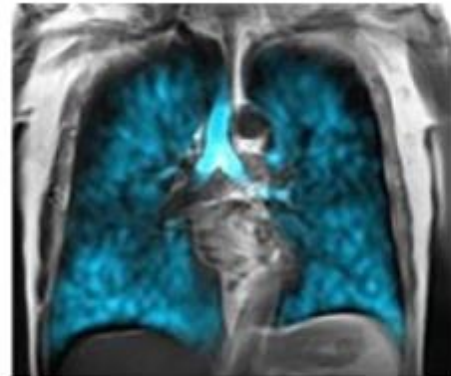
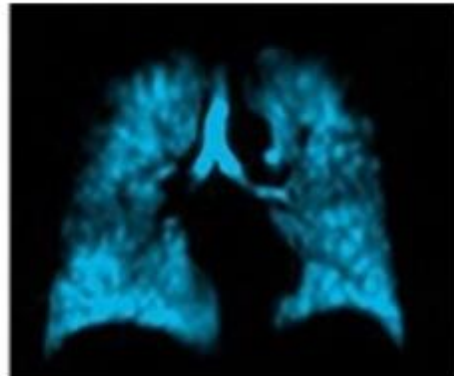
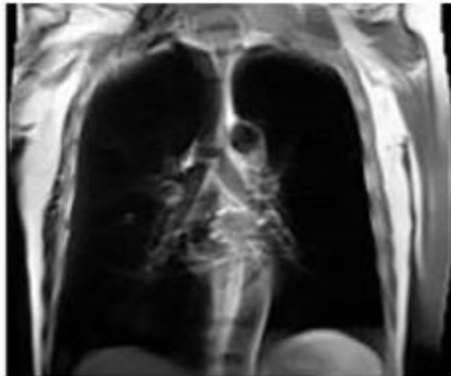
Thank You!

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POLAREAN

Board of Directors (excluding management)



Industry leaders with extensive industry and leadership experience

			Selected Prior Affiliations
	Ken West	Non-Executive Chairman Former Polarean CEO, serial entrepreneur	 
	Bill Blair	Non-Executive Director Non-Executive Director and Chairman of the Audit Committee, North East Finance	 
	Dan Brague	Non-Executive Director Former CEO of Curium North America	 
	Juergen Laucht	Non-Executive Director Former Managing Director of NUKEM Isotopes	
	Cyrille Petit	Non-Executive Director Chief Corporate Development Officer and Head of Strategic Initiatives, Bracco Group	  
	Marcie Ruddy, MD	Non-Executive Director Chief Medical Officer, Tectonic Therapeutic	 
	Frank Schulkes	Non-Executive Director Chief Financial Officer, Distalmotion	