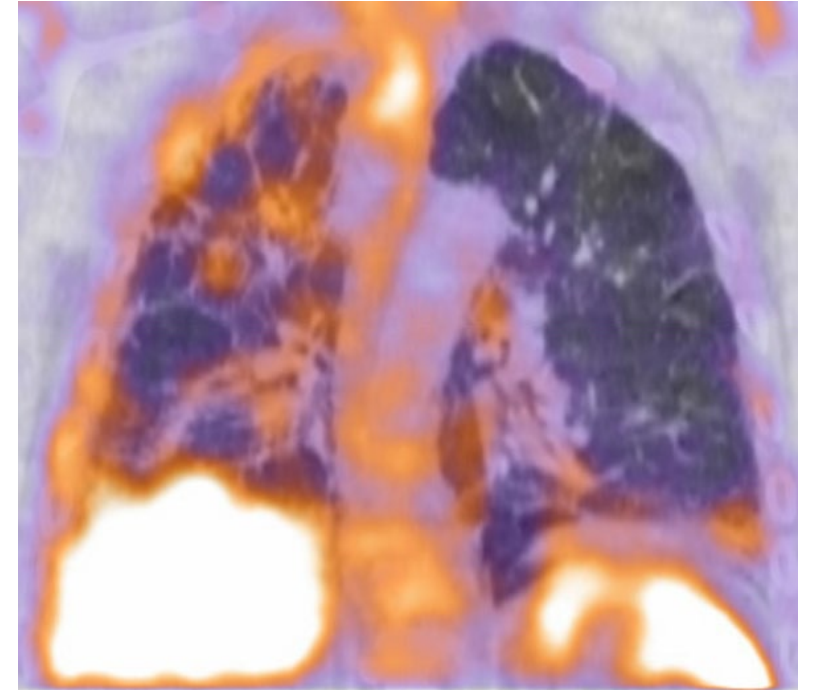


Imaging Lung Inflammation in Interstitial Lung Disease (ILD) with ^{99m}Tc -Maraciclalide – a Therapy Selection Tool?

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Disclosures

None

Interstitial Lung Disease (ILD)



ILD is a collective term representing a diverse group of conditions characterised by reversible inflammation and/or irreversible fibrosis¹



Estimated prevalence: 200/100,000 population (650,000)²



Estimated prevalence: 1,300/100,000 population (>1.5 million)³



Outcomes vary, ranging from occasional, self-limited inflammatory processes (e.g. pSS-ILD⁴) to severe, debilitating fibrosis and death (e.g. IPF⁵, RA-ILD⁶, SSC-ILD⁷)

1. <https://pmc.ncbi.nlm.nih.gov/articles/PMC11063378/>
2. <https://pmc.ncbi.nlm.nih.gov/articles/PMC12767916/>
3. <https://read.qxmd.com/read/41512642/epidemiology-of-interstitial-lung-diseases-in-japan-a-nationwide-database-analysis>
4. Primary Sjogren's syndrome-ILD

5. Idiopathic pulmonary fibrosis
6. Rheumatoid arthritis-ILD
7. Systemic sclerosis-ILD

The Problem

- Inflammation in ILD - especially in early or active phases of sub-types like nonspecific interstitial pneumonia (NSIP), hypersensitivity pneumonitis (HP), or connective tissue disease-ILD (CTD-ILD) - drives alveolar damage before irreversible fibrosis dominates¹
- Selection of appropriate therapy (immunosuppressant or anti-fibrotic) is critically dependent upon assessment of degree of inflammation and fibrosis¹
- High-resolution CT (HRCT) provides structural information but cannot reliably differentiate inflammation from fibrosis²

Major clinical need for a non-invasive tool to identify inflammation in the lungs of patients with ILD and inform treatment decisions³

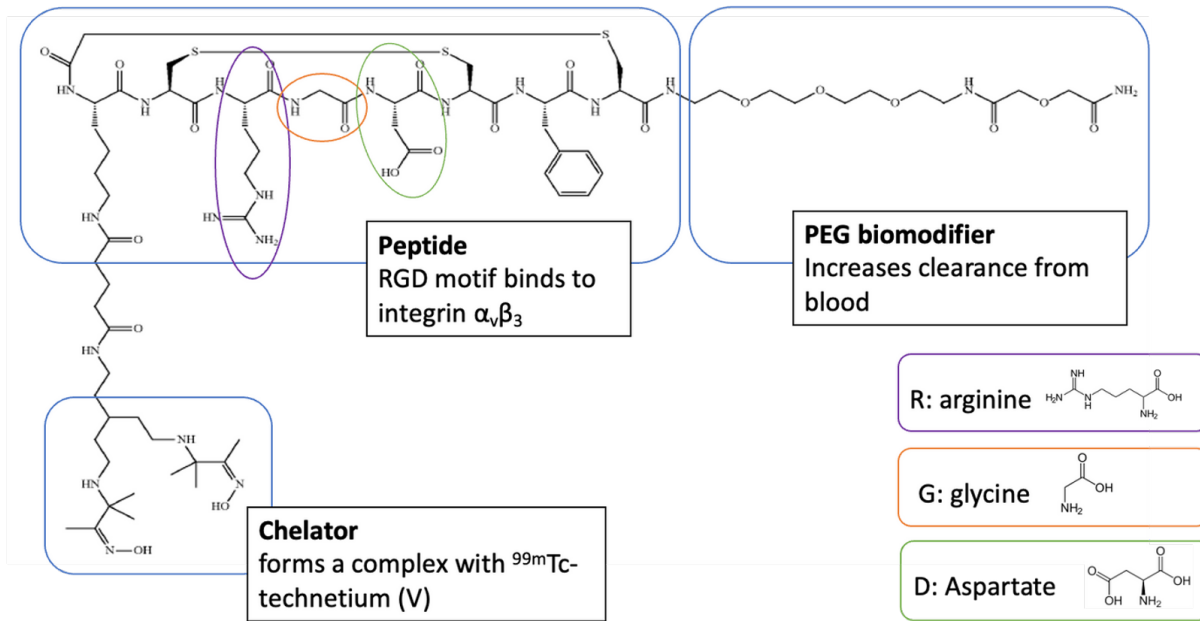
1. <https://pmc.ncbi.nlm.nih.gov/articles/PMC12039538/>

2. <https://publications.ersnet.org/content/breathe/20/1/240006>

3. <https://www.emjreviews.com/wp-content/uploads/2026/01/Current-and-Emerging-Biomarkers-in-Interstitial-Lung-Disease.pdf>

Maraciclattide

Binds to $\alpha_v\beta_3$ integrin¹ which is upregulated on activated endothelial cells and plays a key role in **cell proliferation, angiogenesis and inflammation**²



- “Cold-kit” formulation containing 75 μ g maraciclattide
- 20 mins reconstitution @ RT with Technetium-99m (^{99m}Tc) pertechnetate
- 15-20 mins QC (iTLC)
- 6 hours shelf-life post-reconstitution

FDA Fast Track designation granted for visualization of inflammation in the lungs of patients with known and suspected **ILD** and visualization of diagnosis of **superficial peritoneal endometriosis**

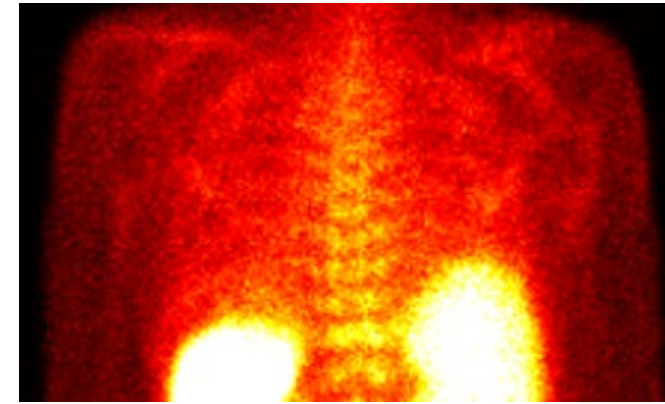
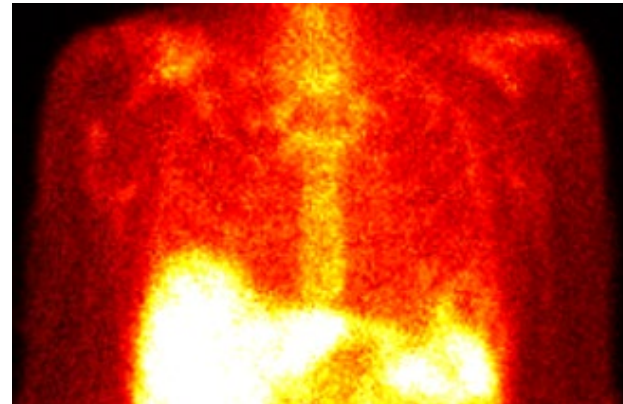
1. <https://pubmed.ncbi.nlm.nih.gov/18355693/>
2. <https://pubmed.ncbi.nlm.nih.gov/10022831/>

Planar ^{99m}Tc -Maraciclalide Images of RA Patients With and Without RA-ILD¹

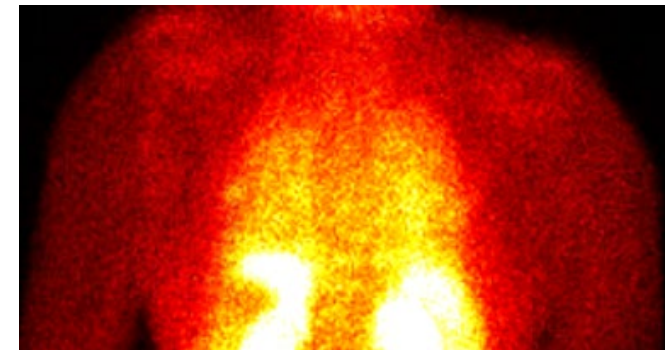
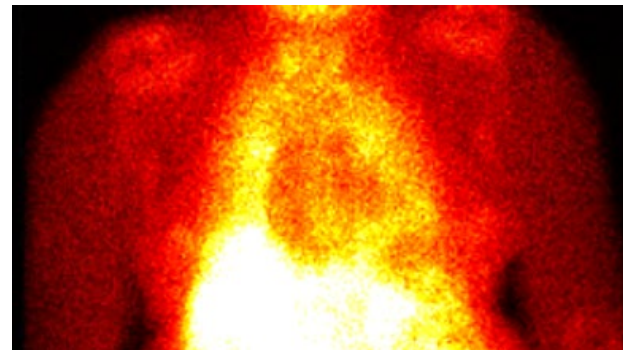
Anterior

Posterior

Subject #50:
No lung disease



Subject #27:
RA-ILD



1. <https://pubmed.ncbi.nlm.nih.gov/40764199/>

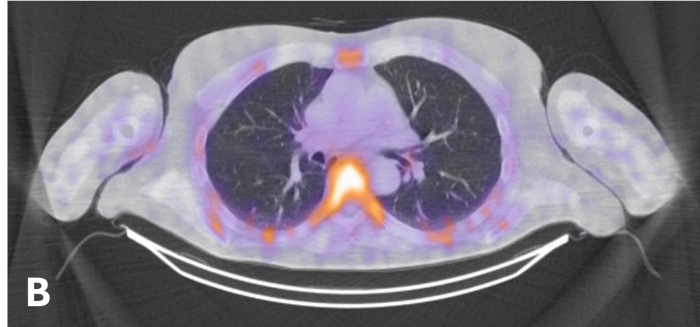
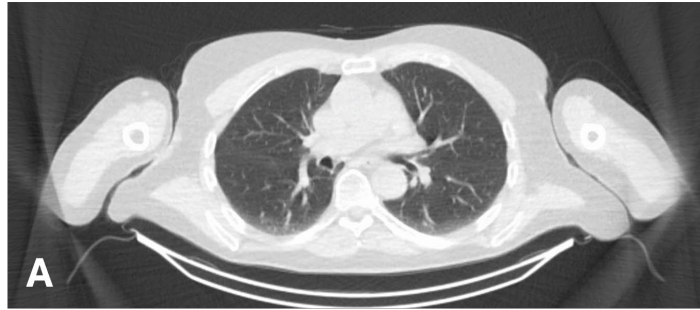
PREDICT-ILD

Methods

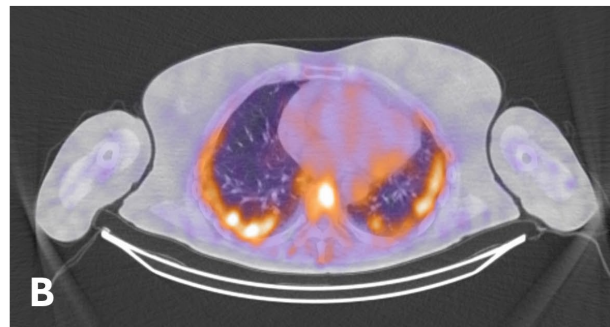
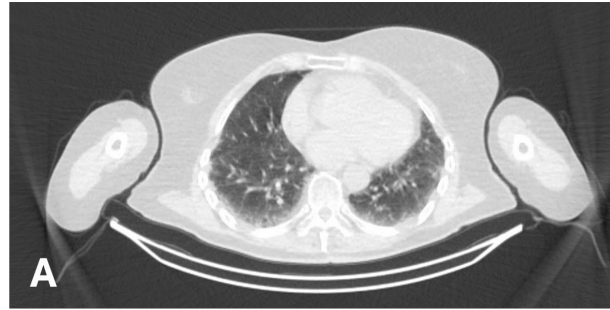
- Idiopathic pulmonary fibrosis (IPF) & fibrotic hypersensitivity (fHP) patients, and aged-matched healthy controls (HC): n=5 each
- Participants received 740 MBq ^{99m}Tc -maraciclalide IV
- Baseline SPECT-CT images (20 min acquisitions) were acquired 2 hours post-injection
- Images were reviewed by nuclear medicine and thoracic radiologists and classified according to distribution/intensity of standardized uptake values (SUVs) and radiological pattern
- Lung SUV_{max} was compared to lung SUV_{min} to provide a target to background ratio (TBR) and mean whole lung SUV was calculated

PREDICT-ILD

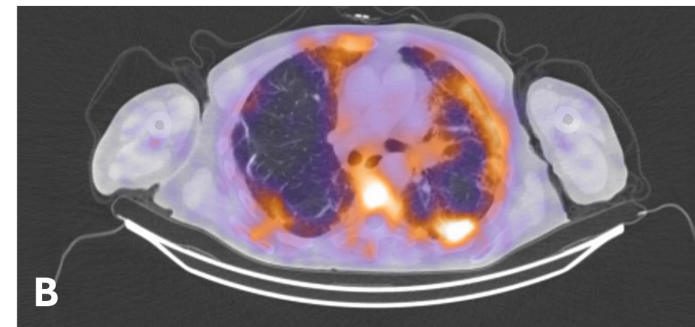
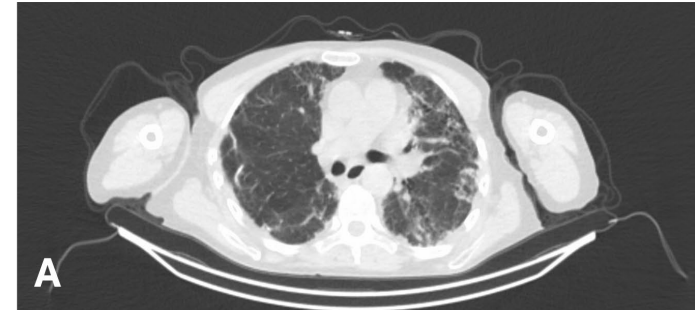
Results



Healthy Control
(HC)



Idiopathic Pulmonary Fibrosis
(IPF)



Fibrotic Hypersensitivity Pneumonitis
(fHP)

Sample images from each participant group: A. CT only; B. SPECT-CT

PREDICT-ILD

Results

	IPF	fHP	HC
Age (median +/- IQR)	75 (12)	70 (9)	75 (6)
Gender M:F	4:1	2:3	3:2
Ever Smokers	1/5	1/5	3/5
FVC % predicted (mean +/- 95% CI)	87 (72.2-101.8)	70.9 (54.5-87.4)	n/a
TLCO % predicted (mean +/- 95% CI)	52.0 (36.0-68.0)	52.1 (42.3-61.8)	n/a
Mean SUV (std)	0.95 (0.2)	1.24 (0.19)	0.75 (0.09)
Mean TBR (std)	3.4 (1.6)	3.4 (1.4)	1.7 (0.8)

Conclusions

- Imaging of $\alpha_v\beta_3$ integrin with ^{99m}Tc -maraciclatiside reveals increased activity in patients with fibrotic ILD compared to healthy controls
- Visualization of inflammation in the lungs of patients with fibrotic ILD appears feasible

The Potential

- Detection and quantification of inflammation in the lungs of patients with ILD, non-invasively with ^{99m}Tc -maraciclatide could:
 - Identify treatable (inflammatory) vs. fibrotic (less responsive) phases of disease
 - Guide immunosuppression (e.g. steroids, mycophenolate) vs. antifibrotics (nintedanib, pirfenidone).
 - Enable Nuclear Medicine to improve outcomes in this common and difficult to treat disease