



AT THE FOREFRONT
UChicago
Medicine

DIFFUSE NODULAR LUNG DISEASE ON CHEST CT

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@jonherochung

Disclosures

- Consultant:
 - Boehringer Ingelheim
 - Genentech
 - Veractye
- Speakers bureau:
 - Boehringer Ingelheim
 - Genentech

Goals

- Recognize different patterns of diffuse nodular lung diseases
- Formulate appropriate differential diagnosis based on nodular patterns
- Recall imaging or clinical findings which allow for a specific diagnosis within disease categories

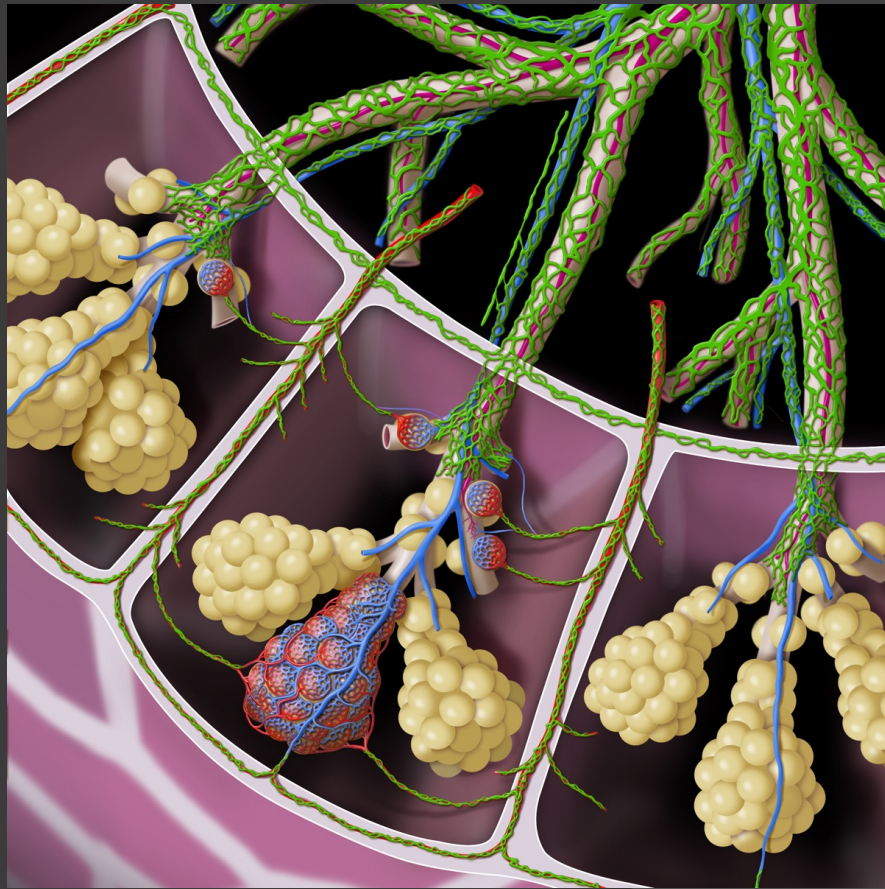
Outline

- ① Definition of diffuse nodular lung disease
- ① Categories with case examples
 - Random
 - Centrilobular
 - Perilymphatic
- ① Summary/Conclusion

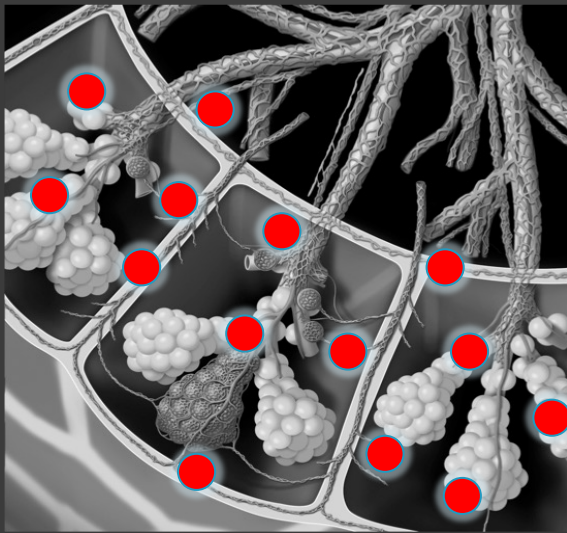
Definition

- ⦿ Innumerable nodules
- ⦿ Usually smaller than 4-5 mm
- ⦿ Bilateral
- ⦿ Generally symmetric
 - Perilymphatic and centrilobular nodules

Secondary Pulmonary Lobule

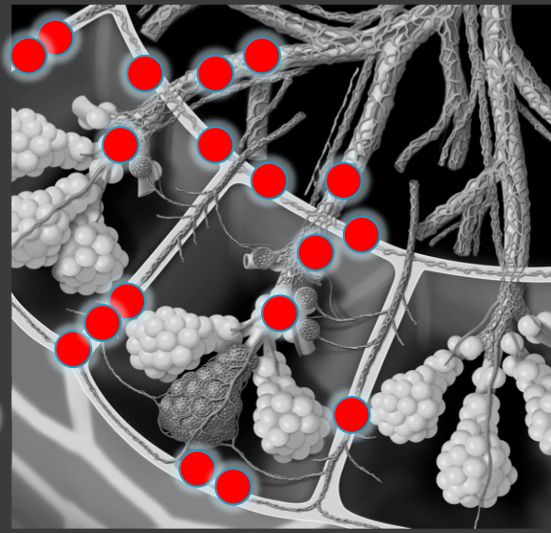


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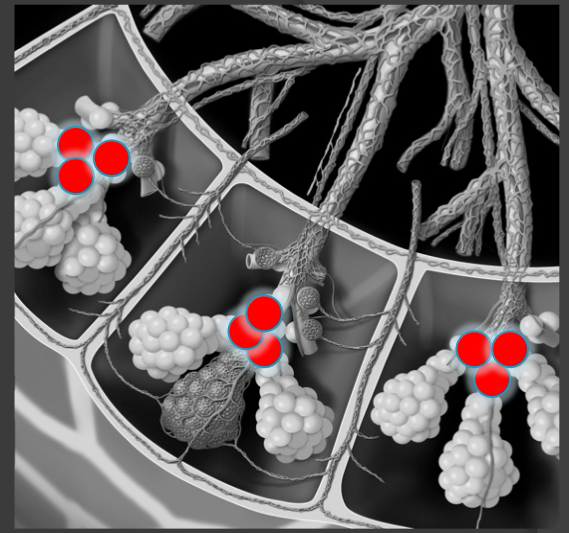
Random

- Hematogenous
- Subpleural
- Miliary PNA or mets



Perilymphatic

- Lymphatics
- Subpleural
- Sarcoid or CA

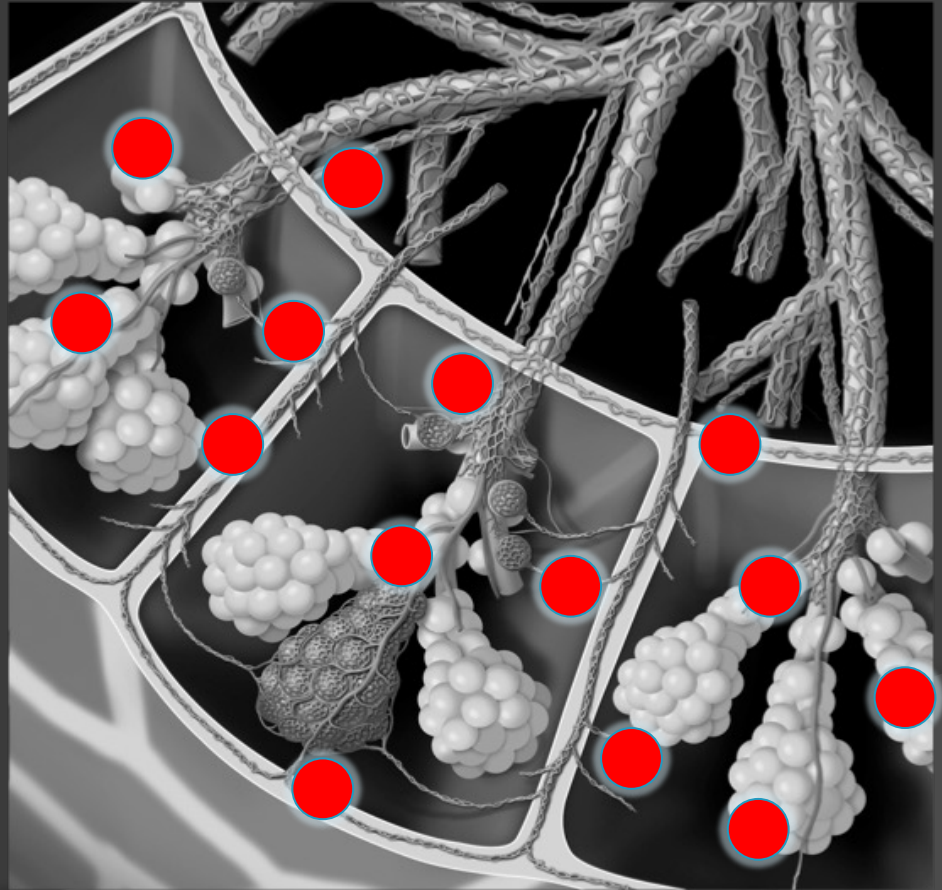


Centrilobular

- Airways*
- No subpleural
- Broad
 - TIB (rarely vascular)
- GGO

Random nodules

- Diffuse and usually bilaterally symmetric
- Usually implies hematogenous spread to lungs
- May be more profuse at lung bases
 - More blood flow

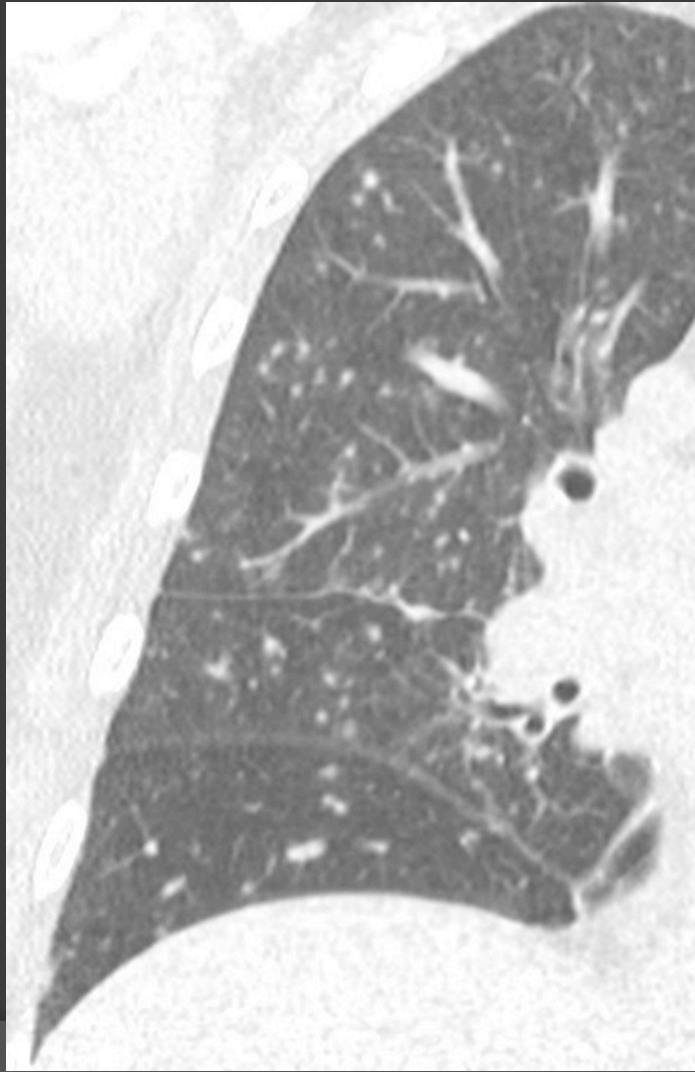


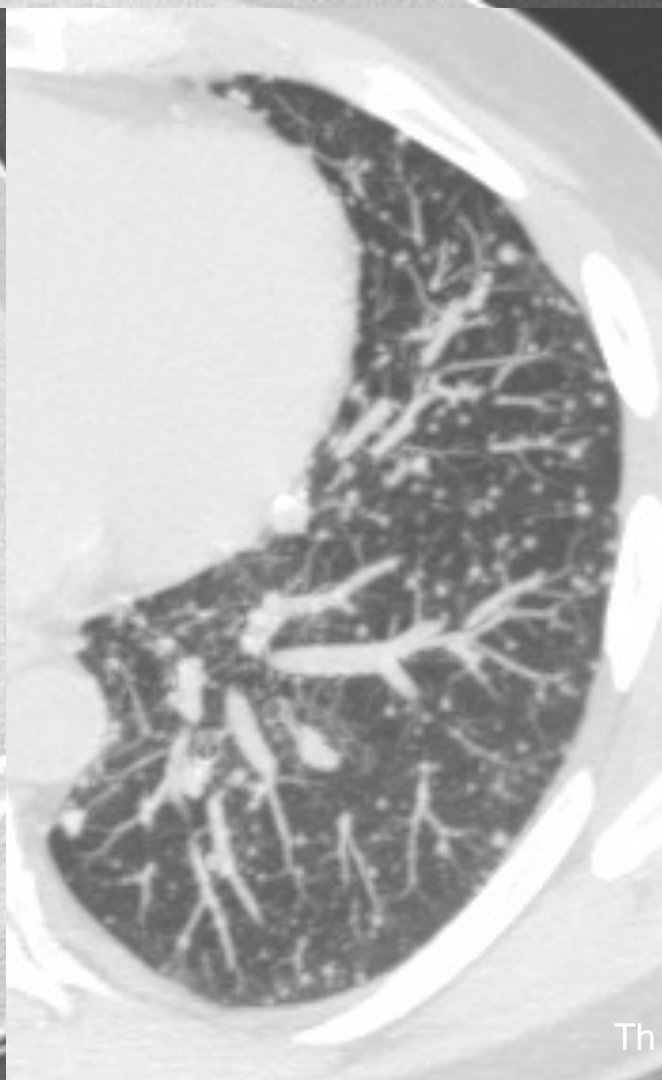
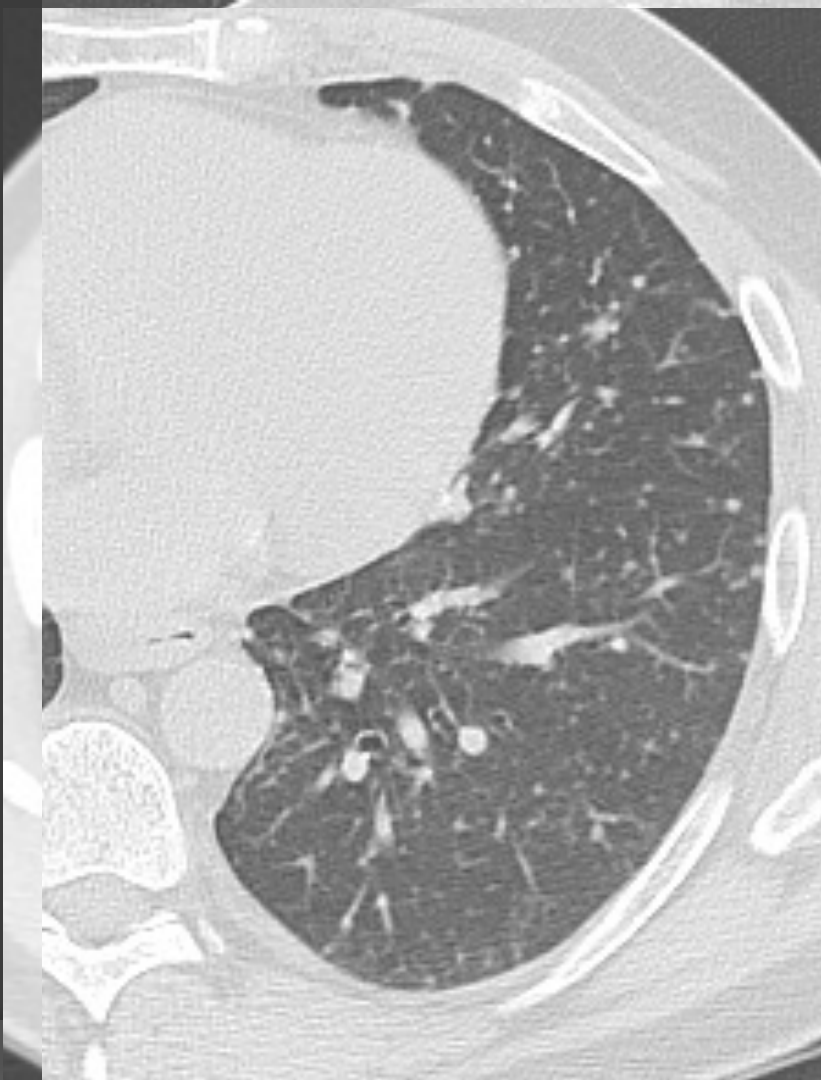
Random nodules on CT



Random nodules: DDx

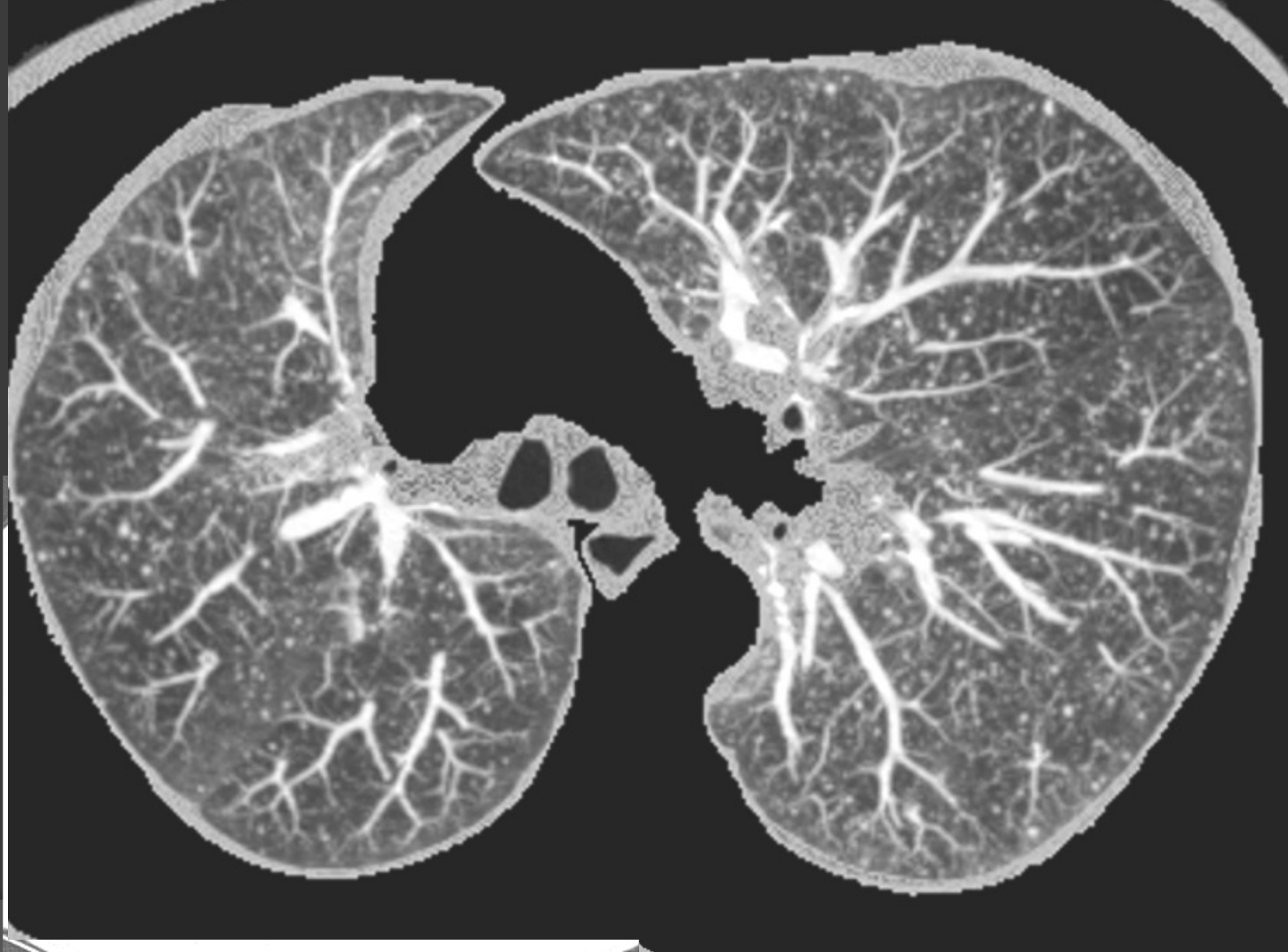
- ◎ **Miliary pneumonia**
- ◎ **Hematogenous metastases**
- ◎ Rare manifestation of other nodular diseases
 - Sarcoidosis
 - Silicosis, Coal workers pneumoconiosis
 - Pulmonary ossification





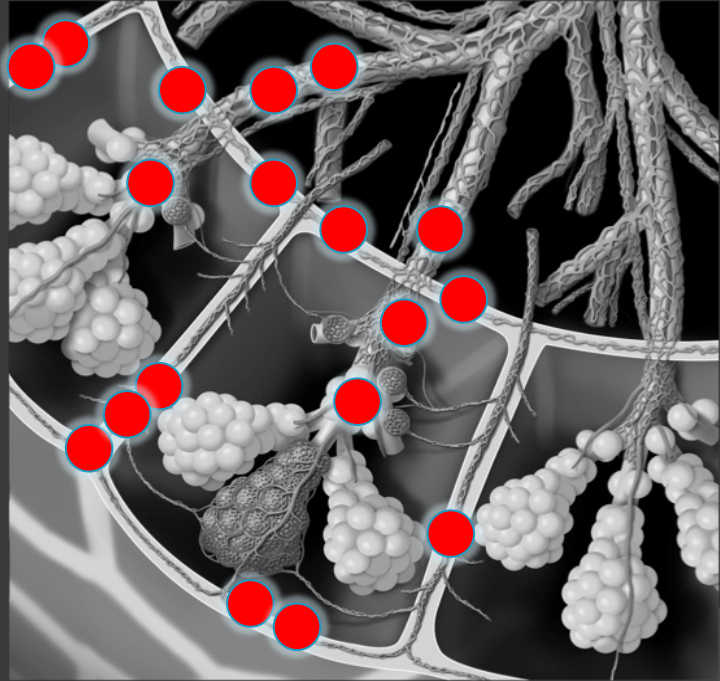


TB

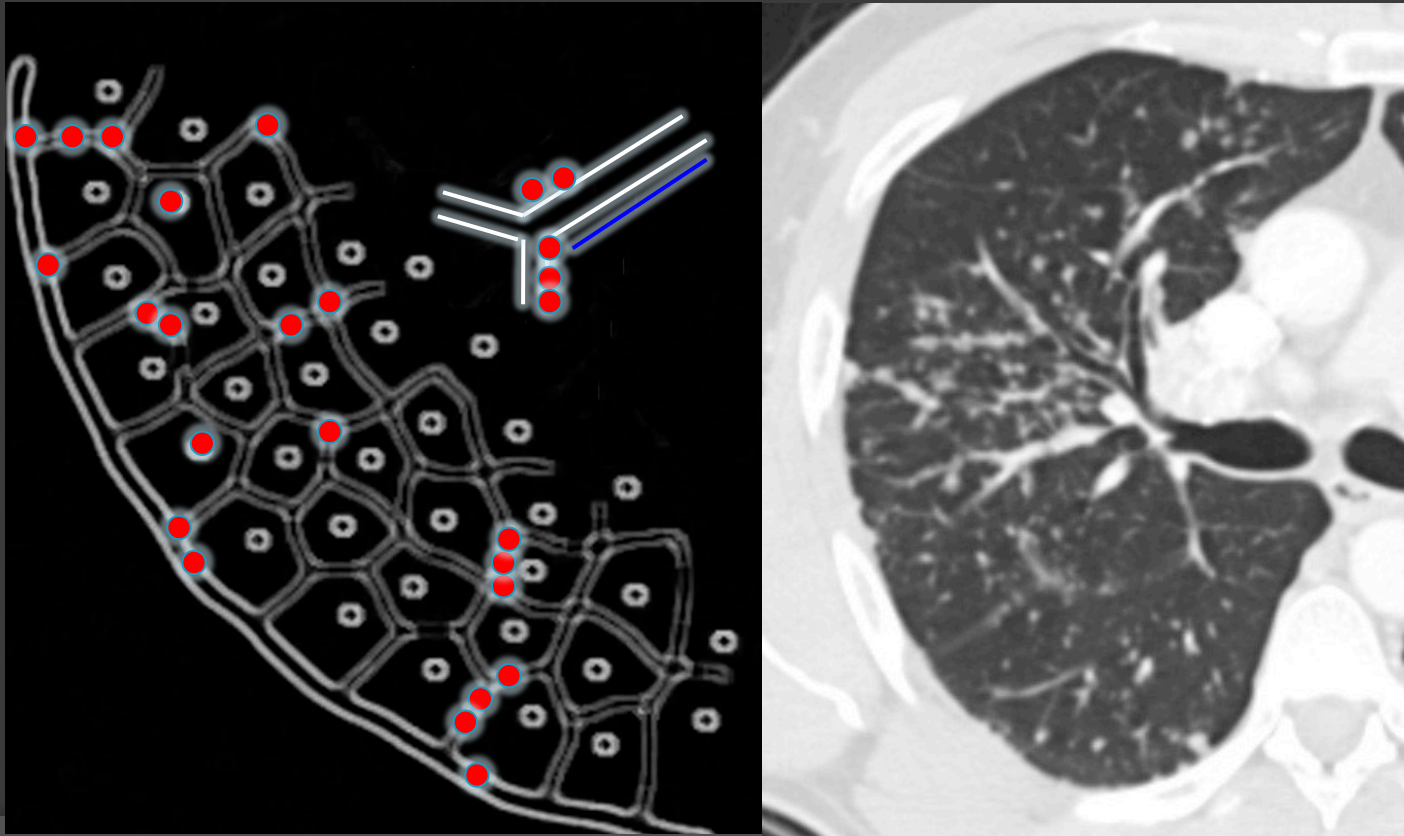


Perilymphatic nodules

- Along lymphatic drainage of lungs
 - Bronchovascular tree
 - Subpleural lung (fissures)
 - Interlobular septa
- +/-interlobular septal thickening
- May be patchy or asymmetric



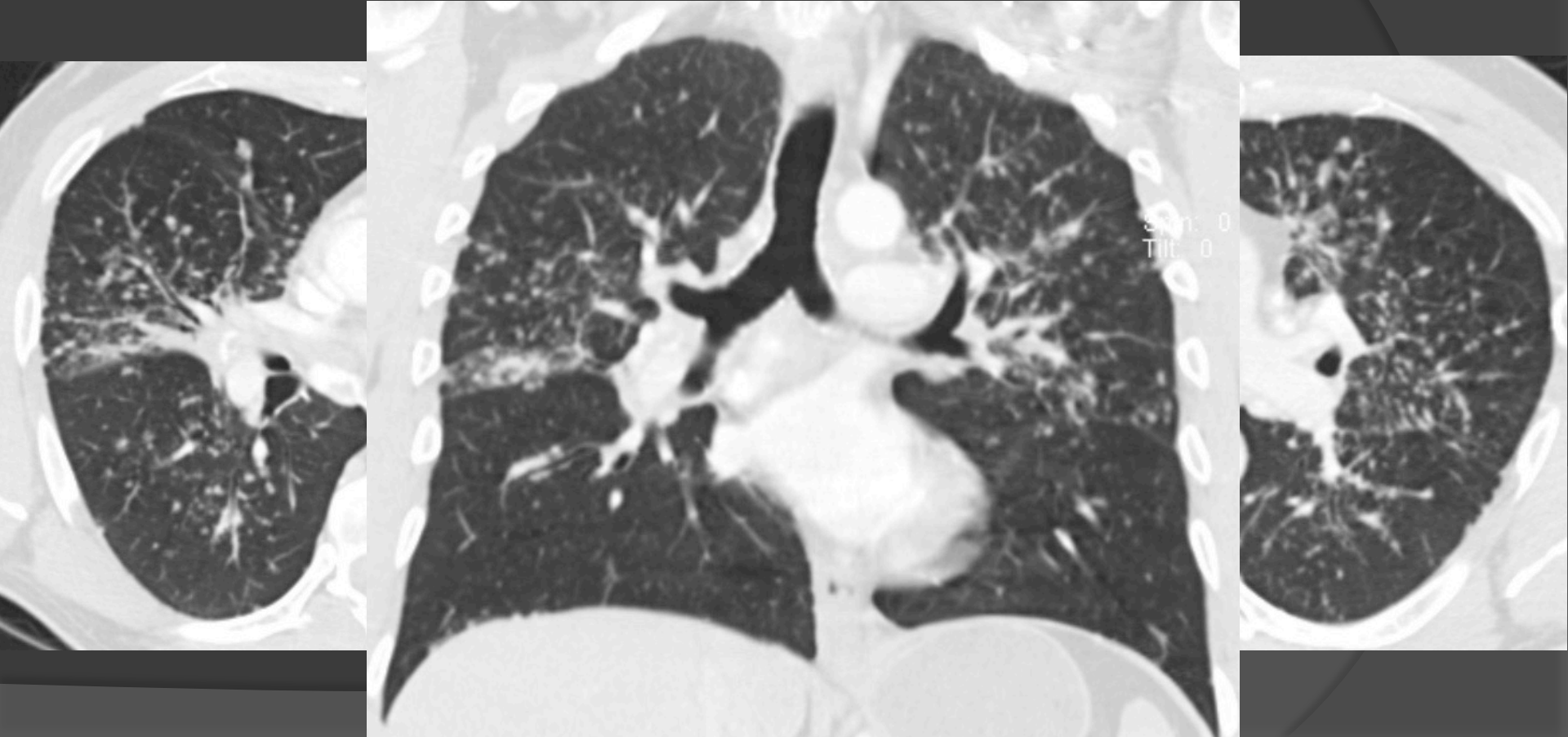
Perilymphatic nodules on CT



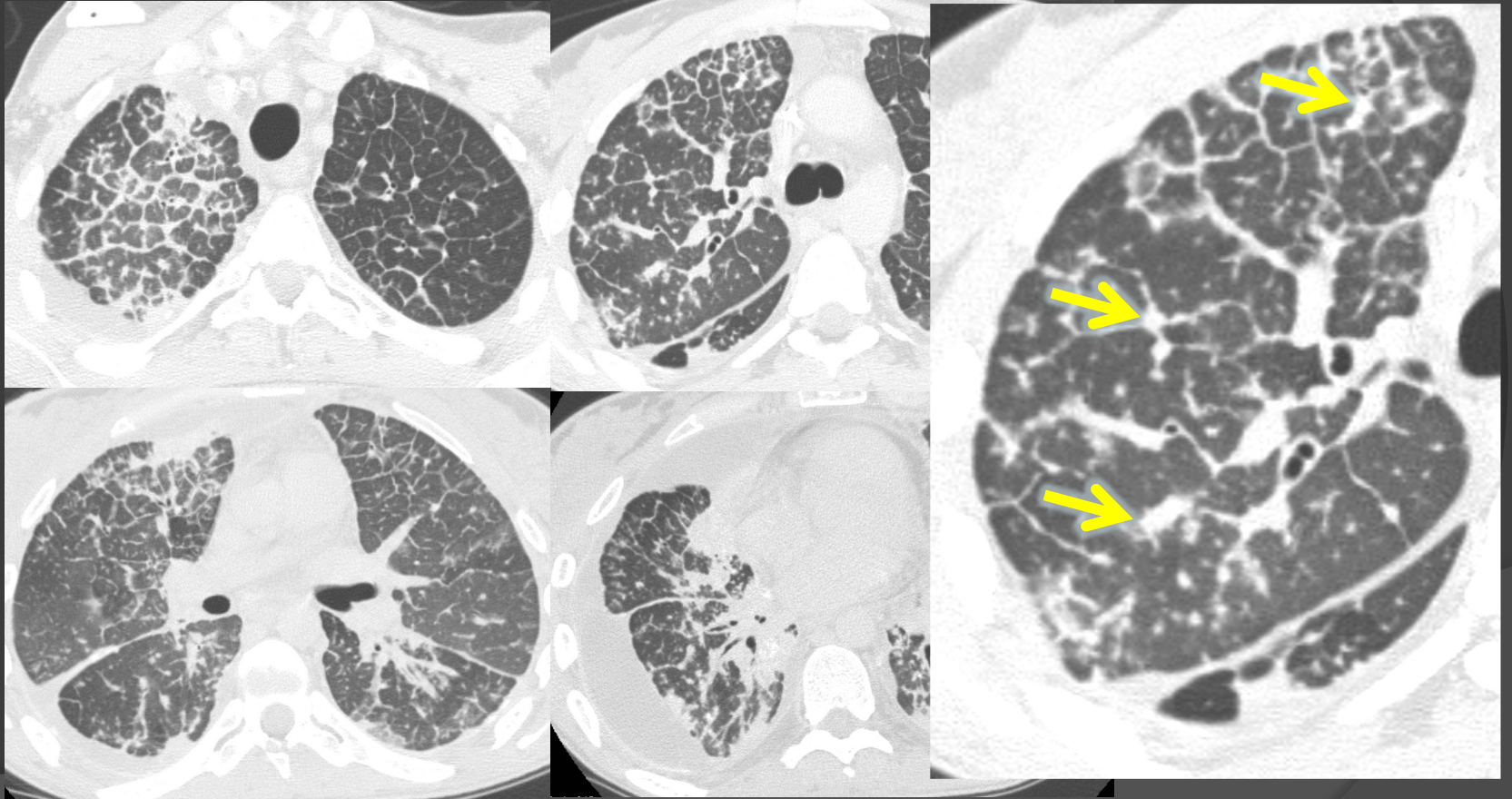
Perilymphatic nodules: DDx

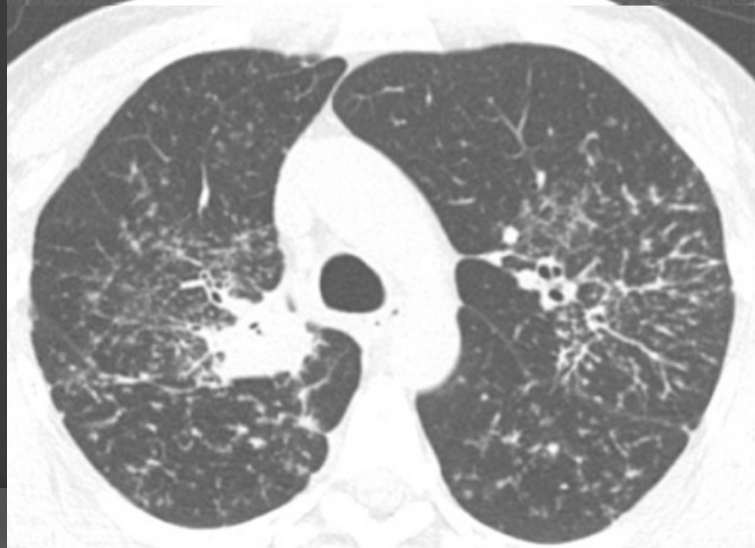
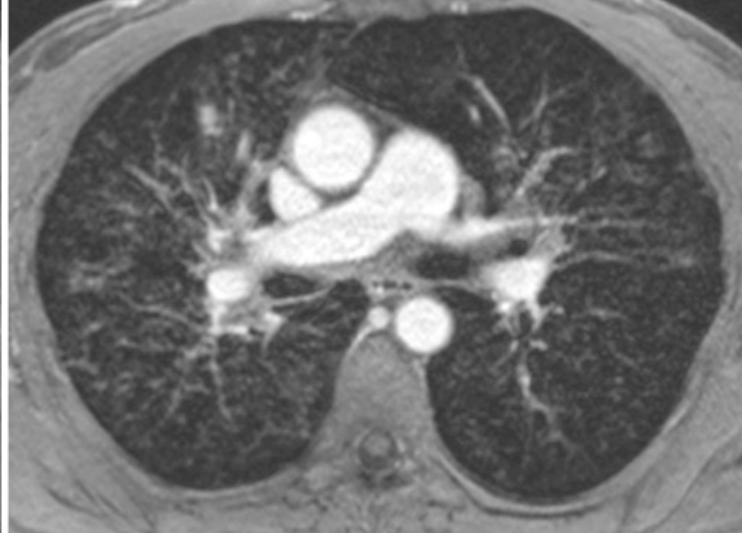
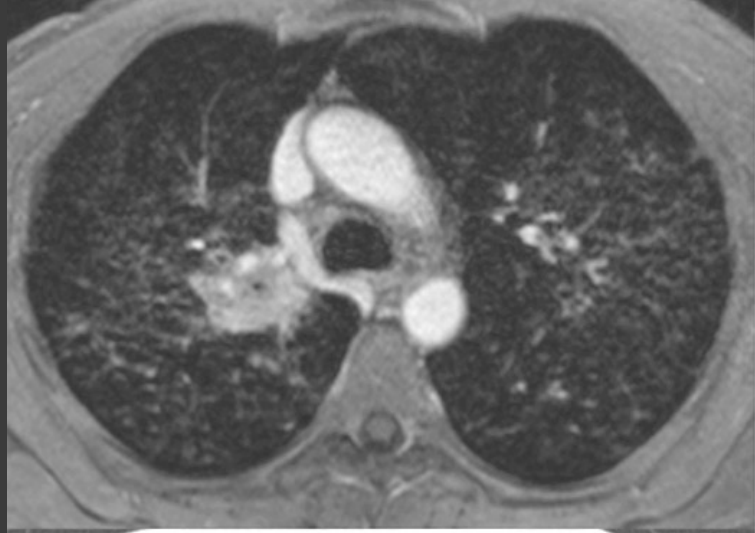
- ◎ **Sarcoidosis (Berylliosis)**
- ◎ **Lymphangitic spread of tumor**
- ◎ Silicosis, Coal workers pneumoconiosis
 - Centrilobular and subpleural
 - Less interlobular septal
- ◎ Dendriform pulmonary ossification
- ◎ Rare
 - Lymphoproliferative disorders
 - Amyloidosis

Sarcoidosis



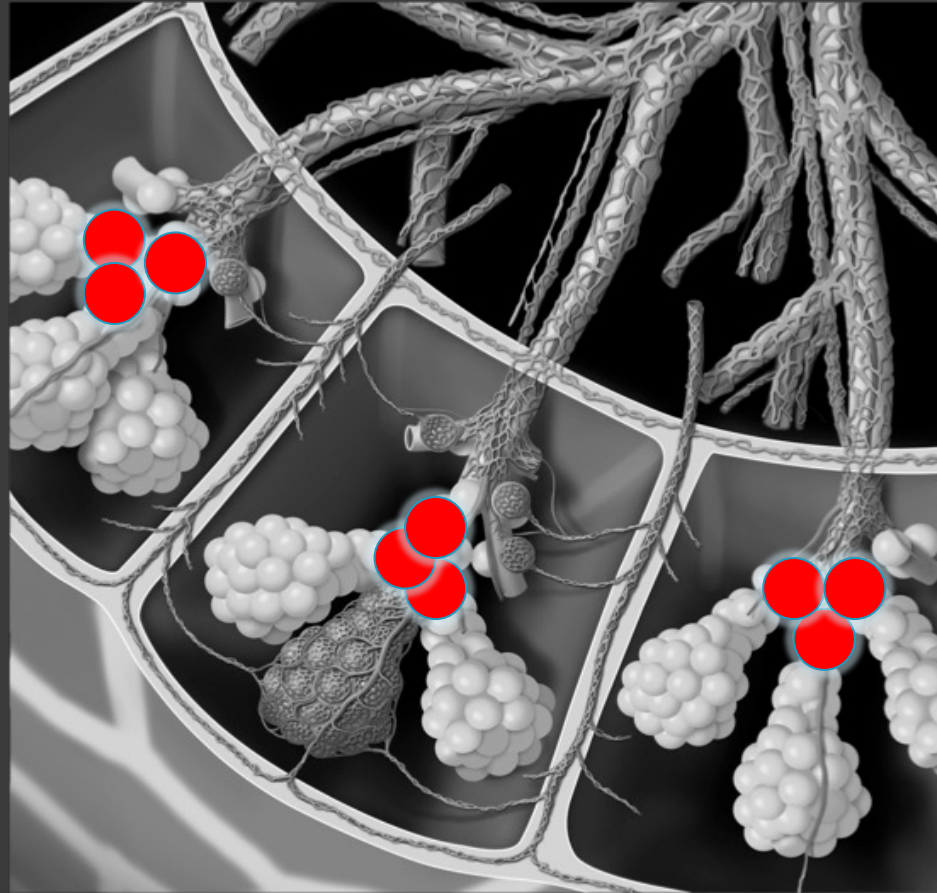
Lymphangitic spread of tumor



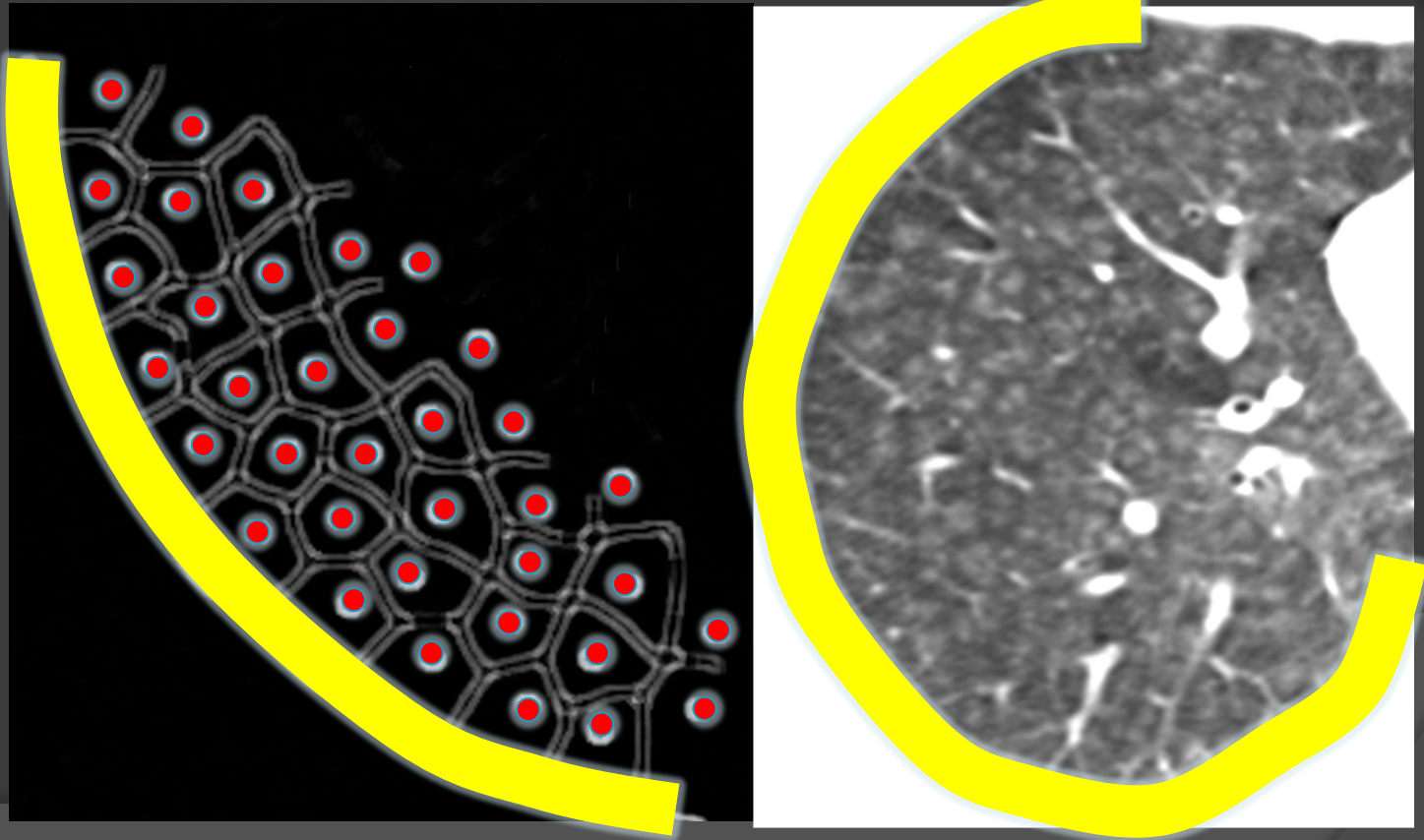


Centrilobular nodules

- Center of secondary pulmonary lobules
- Sparing subpleural lung and interlobular septa
- Solid vs ground-glass
- Tree-in-bud sign



Centrilobular nodules on CT



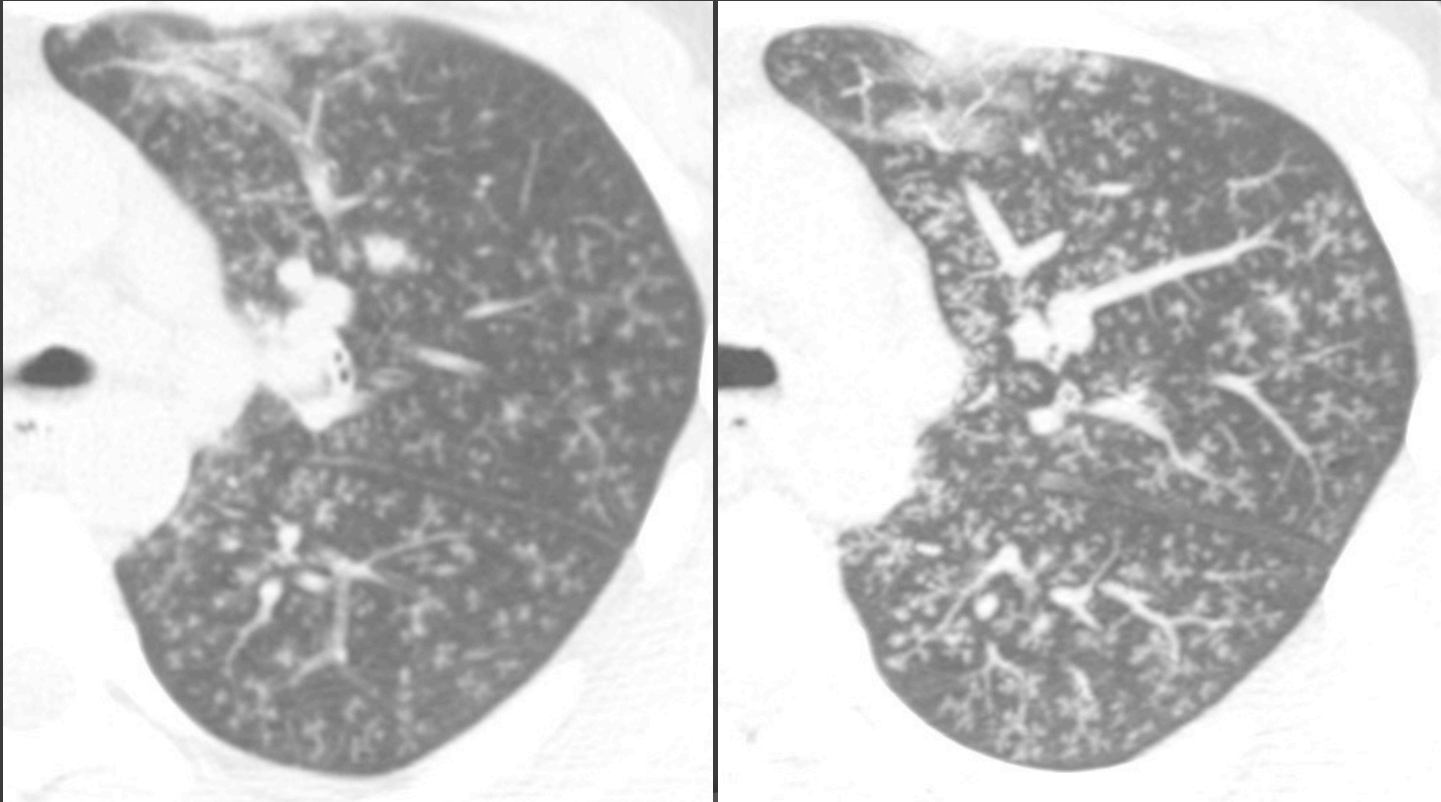
Centrilobular nodules: DDx

- Pneumonia
- Aspiration
- Langerhans cell histiocytosis
- Metastatic disease
- Silicosis, Coal workers pneumoconiosis
- Hypersensitivity pneumonitis
- Respiratory bronchiolitis
- Pulmonary hemorrhage
- Adenocarcinoma (formerly BAC)

Centrilobular tree-in-bud: DDx

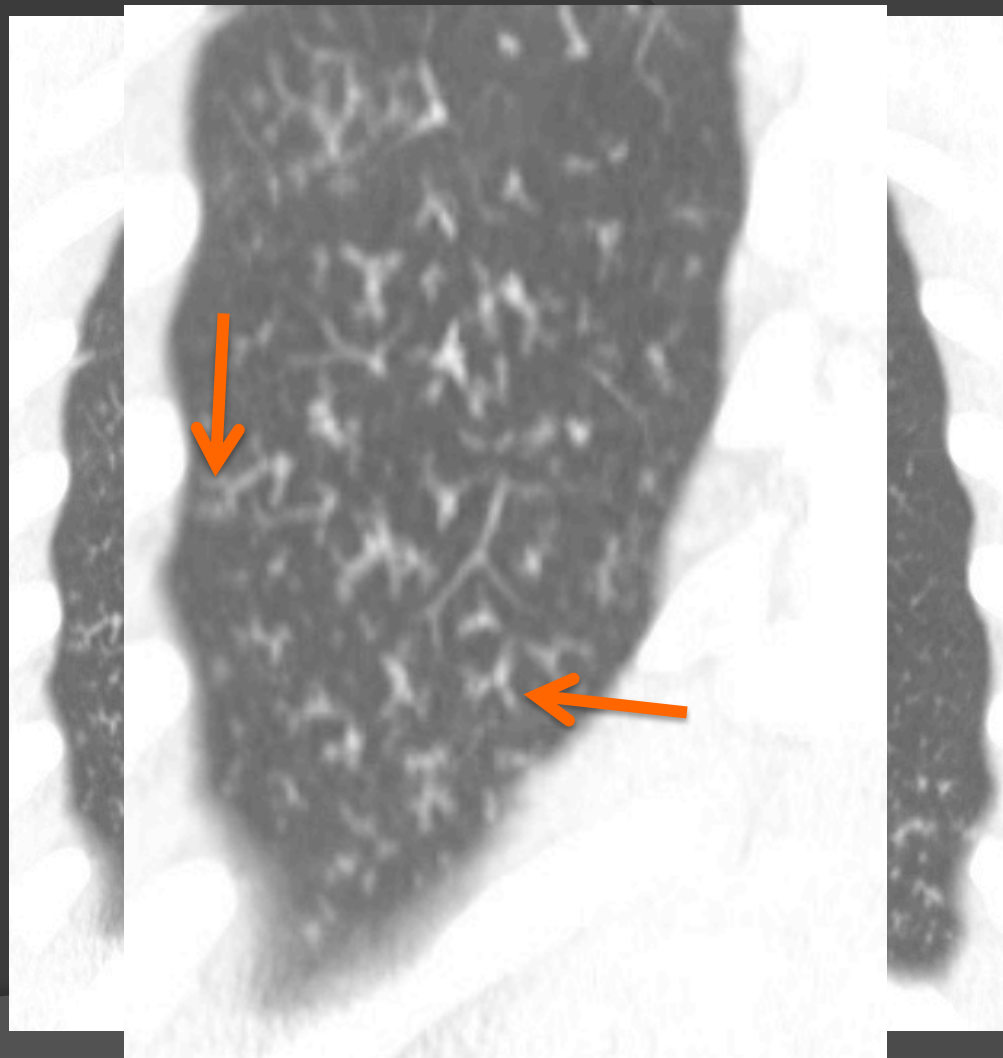
- ◎ **Almost always** fluid/debris in small airways
 - **Pneumonia**
 - Viral
 - Bacterial
 - Fungal rare
 - **Aspiration**
 - **Diseases that cause bronchiectasis**
 - Adenocarcinoma (rare)
- ◎ Pulmonary arterial vascular disease **rare**

Pneumonia



Aspiration

- Often multifocal
- Dependent portions of the lungs
 - Lung bases
 - Posterior UL and superior segment LL



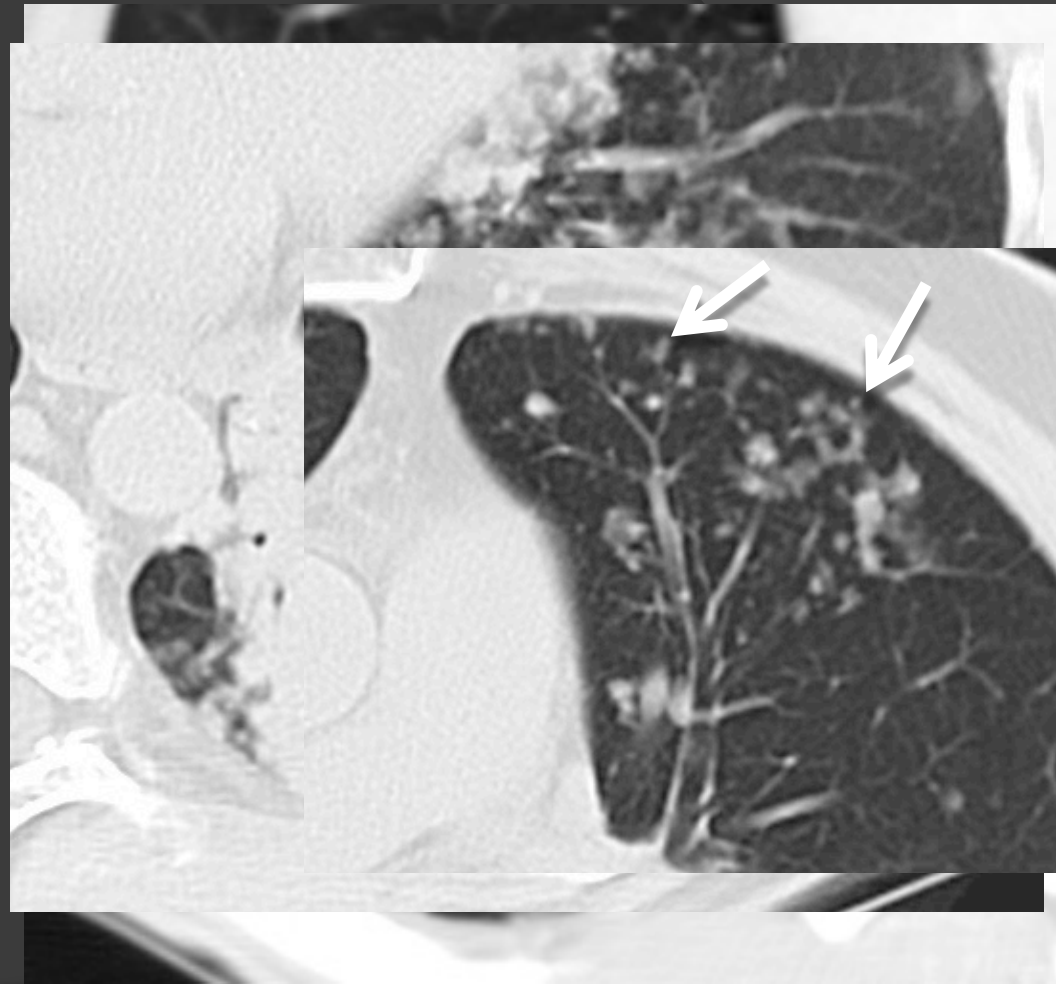
Cystic Fibrosis

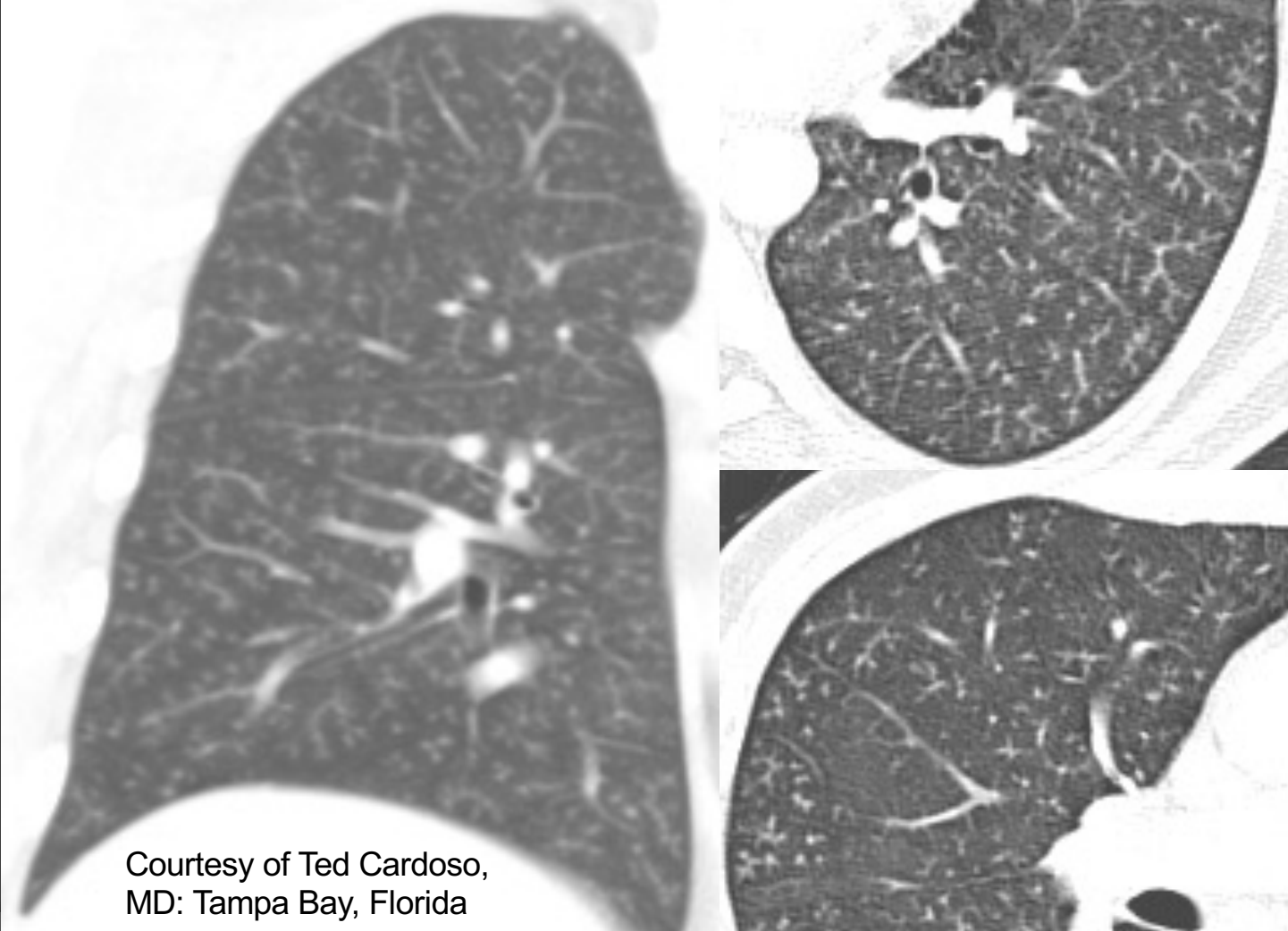
- Upper lobe bronchiectasis
- TIB or CLO nodules
- Upper abdominal
 - Pancreas
 - Liver



Metastases

- PA: Intravascular tumor emboli
- Endobronchial: Lepidic growth in adenocarcinoma (formerly known as BAC)



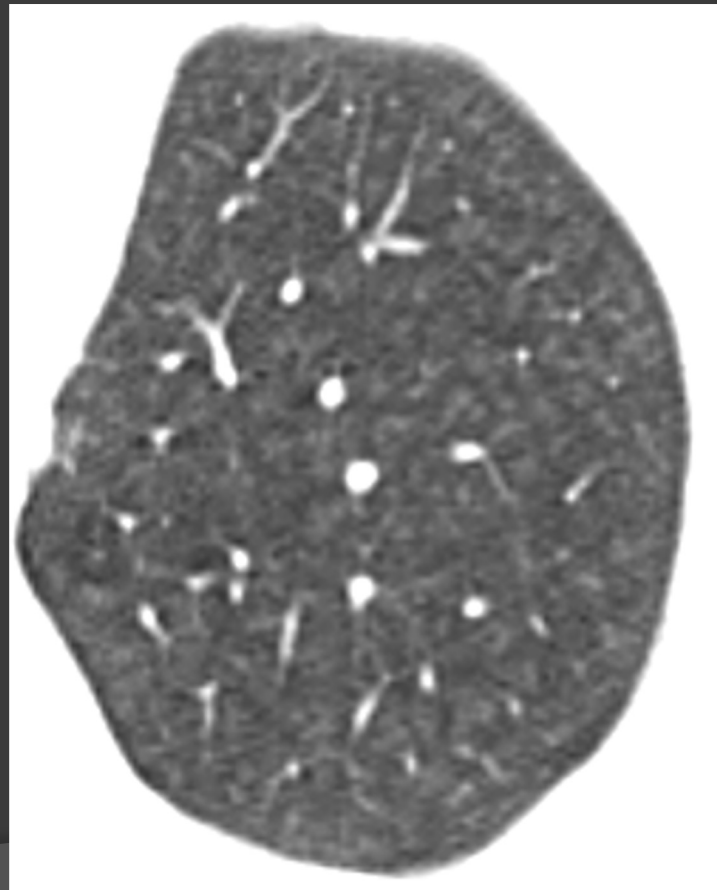


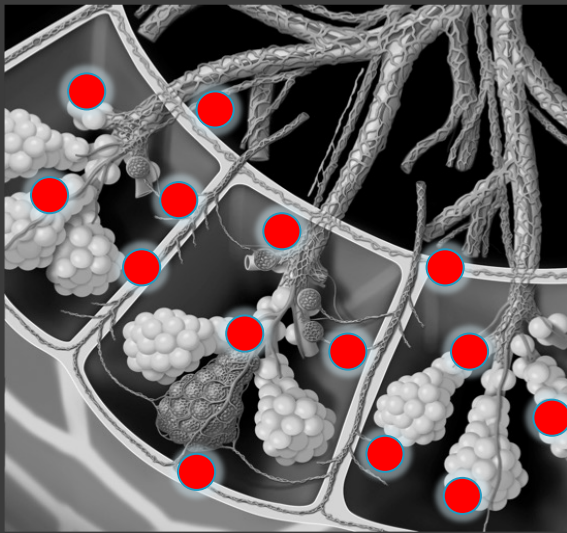
Courtesy of Ted Cardoso,
MD: Tampa Bay, Florida

Centrilobular GGO: DDx

- ① Hypersensitivity pneumonitis
- ① Respiratory bronchiolitis
- ① Pneumonia/Aspiration (acute)
- ① Pulmonary hemorrhage
- ① Metastatic calcification
- ① Adenocarcinoma (rare)

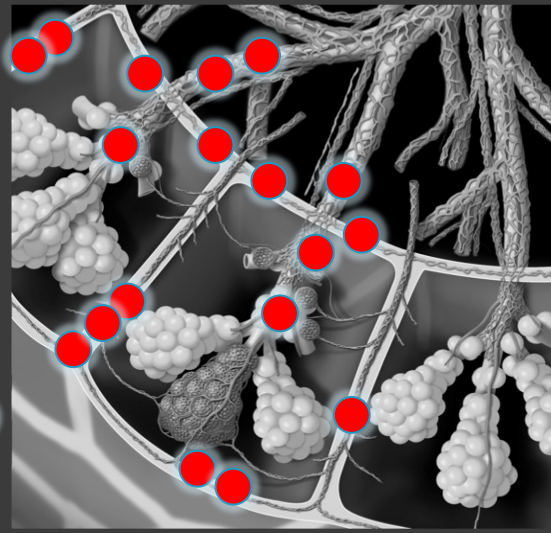
HP and RB





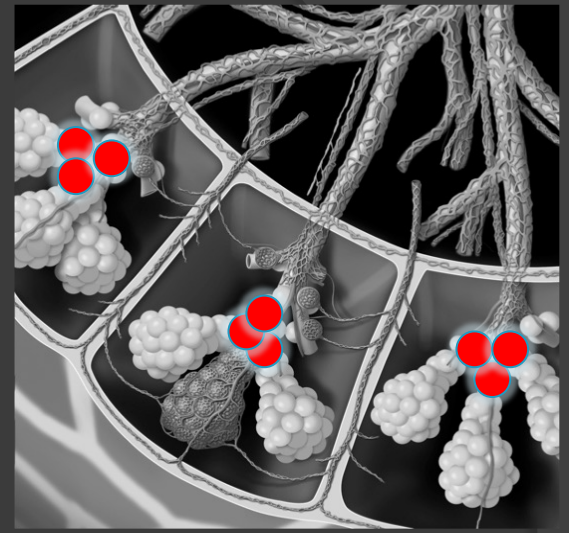
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