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The Imaging Phenomics Company®

iBiopsy® AI-powered Lung Cancer Screening

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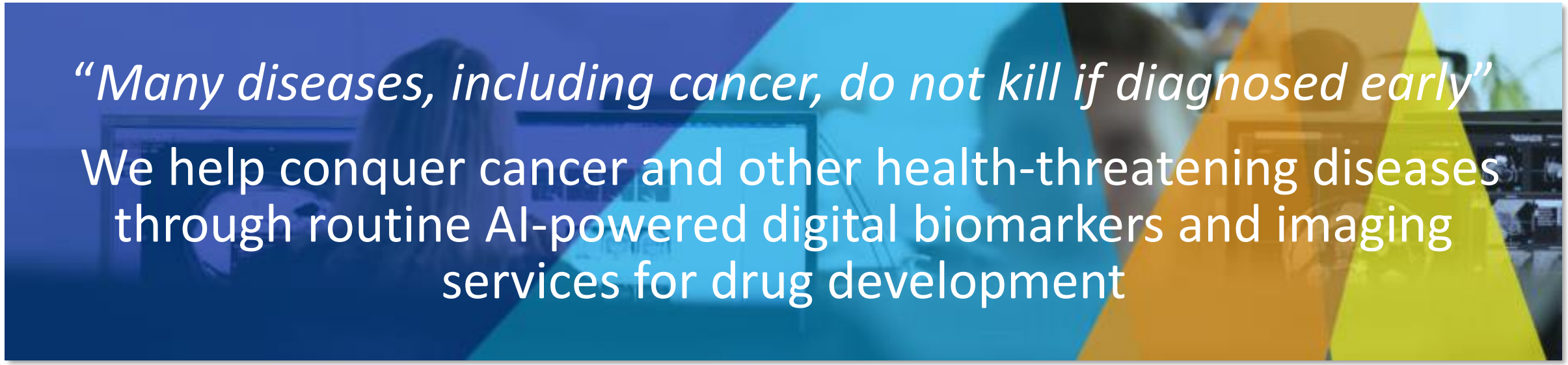
Credits to the iBiopsy® AI/DS and Clinical Science teams

RSNA AI Theater

RSNA® 2021 REDEFINING RADIOLOGY

Innovation Is in Our DNA



Our Growth: Powered by proprietary technology, strong KOL connections, and medical, scientific, technology partnerships

Our People: As of October 2021, 180+ employees worldwide (EU, US & China), 30% working in R&D

Our locations: HQ in France with subsidiaries in the US and in China

Our 2 Business Units:

- **iCRO**: image management for oncology trials
- **iBiopsy®**: AI-powered SaMD as novel disruptive digital biomarkers

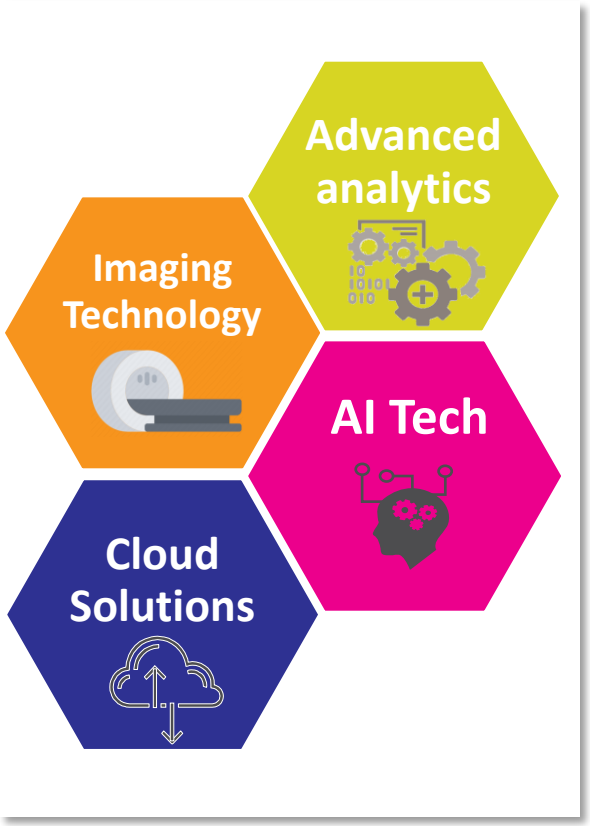
Our iBiopsy® clinical partners

ASSISTANCE PUBLIQUE HÔPITAUX DE PARIS

UC San Diego

Solutions for Disease Diagnosis & Monitoring

Transforming the science of medical imaging



iCRO

Imaging solutions and services for oncology trials, based on the iSee® imaging platform

Creating Value From Medical Images

iBiopsy®

Foster precision medicine through AI-based digital biomarkers

DRUG DEVELOPMENT
Improve and optimize the assessment of new drugs in clinical trials

PATIENT CARE
Improve diagnosis and monitoring of patients

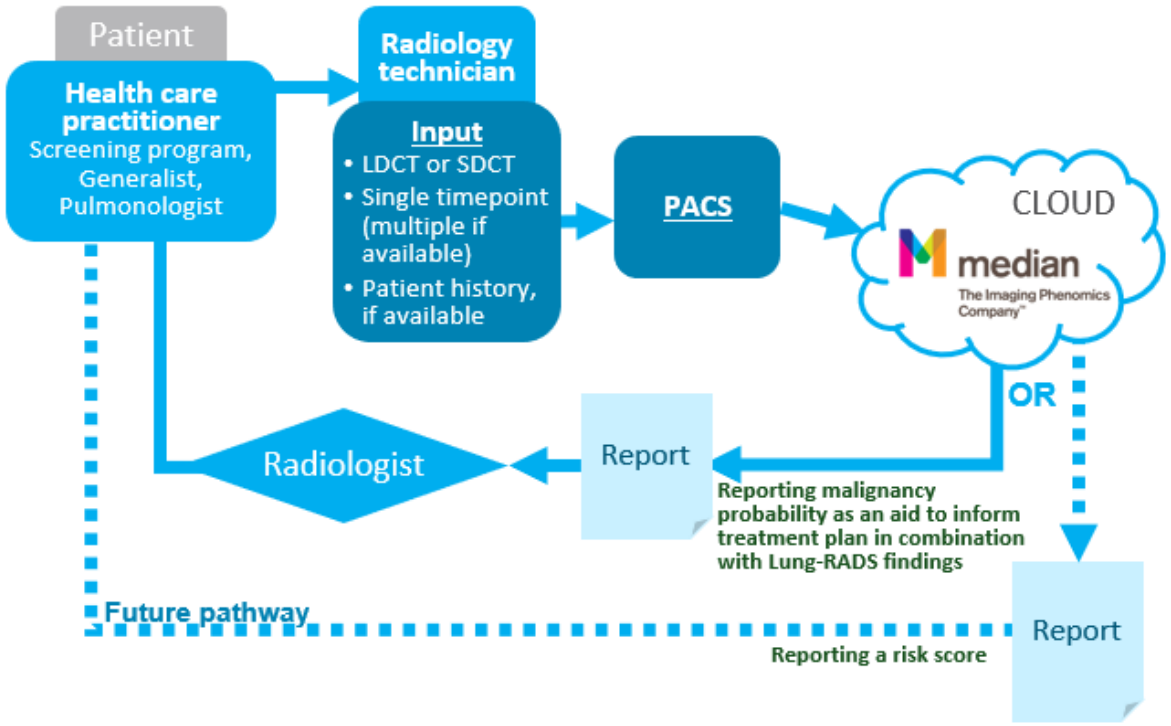
iBiopsy® Lung Cancer Screening

A unique AI-powered end-to-end CADe/CADx SaMD for early diagnosis

Intended use

iBiopsy® - Lung Cancer Screening is an AI powered Software as a Medical Device designed to

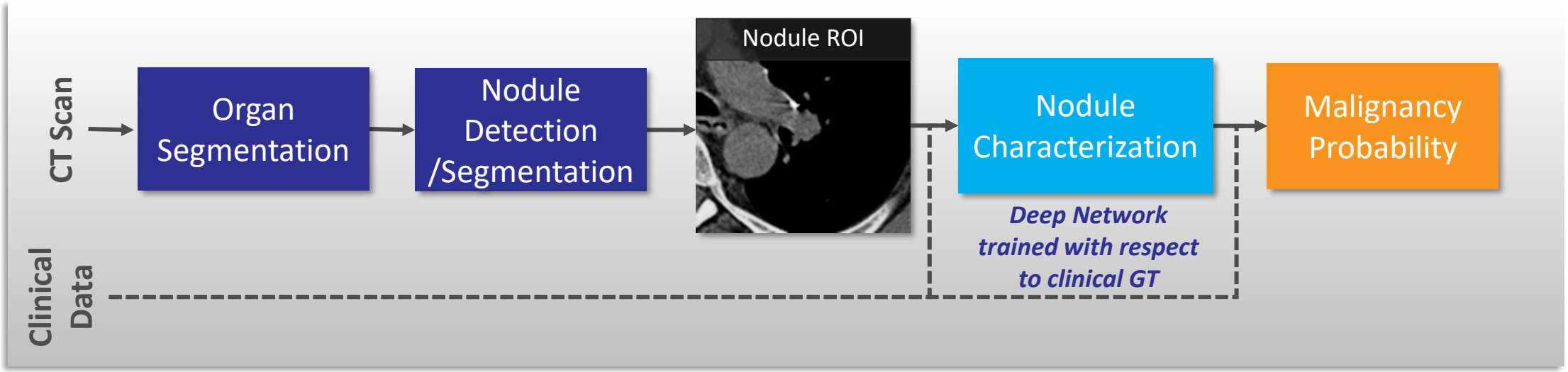
- Automatically **detect** and **characterize** pulmonary nodules from CT images
- For each detectable lesion, results including location of the lesion, lesion segmentation, and all nodule characteristics
- Provide a validated risk assessment of the probability of lung cancer for each detected nodule
- A per case score is also provided for the entire CT exam
- Guide a physician for patient management



iBiopsy® Lung Cancer Screening

A unique AI-powered end-to-end CADe/CADx SaMD for early diagnosis

Processing Pipeline



Baseline Model

- Nodule Regions Of Interest (ROI) are extracted through manual detection/segmentation by radiologists
- These ROI are then processed by a proprietary deep network trained in fully supervised fashion
- This deep network model (based on Convolutional Neural Nets and fully-connected layers) outputs a malignancy probability

iBiopsy® Lung Cancer Screening

Automatically detect, segment & characterize nodules

Lung Segmentation

- Deep Neural Network trained on LIDC/Luna16 dataset
- Independent verification on PleThora
- DICE "similarity coefficient“ >= .98

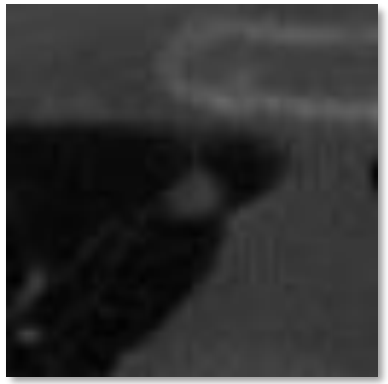
Original Scan (CT)

Reference Labels (GT)

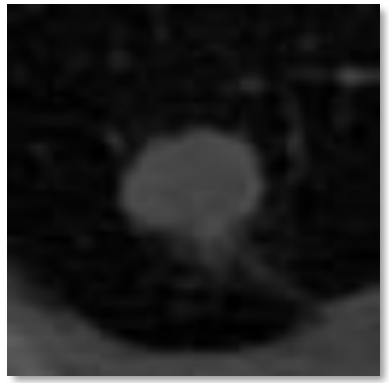
iBiopsy® Segmentation

Nodule Detection/Segmentation

- Experiments ongoing using LIDC/Luna16 and NLST datasets



Malignant



Benign

Nodule Characterization

- Nodule-wise characterization on a subset of NLST

iBiopsy® Lung Cancer Screening:

Cutting-edge performance with innovative deep learning algorithm

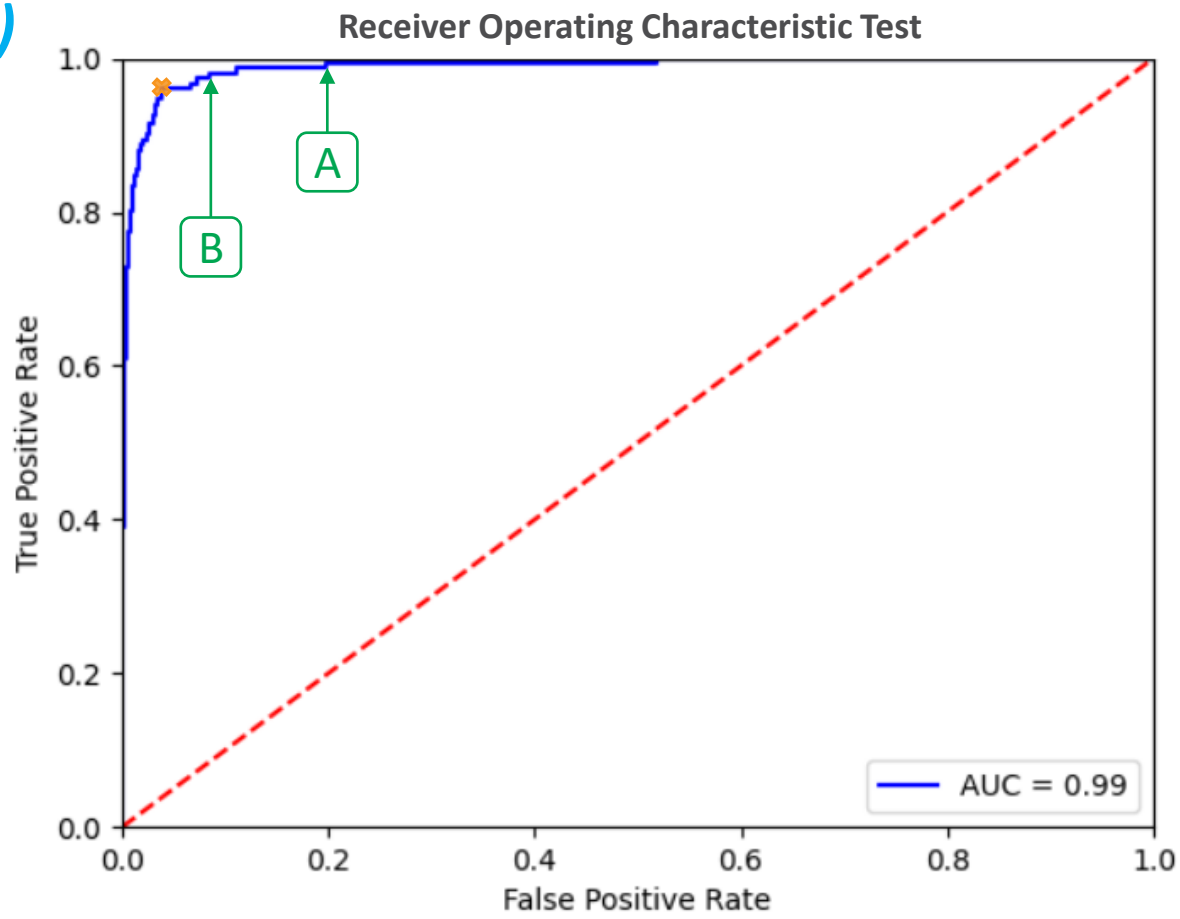
Nodule Characterization (Nov 23rd Press Release)

Nodule-wise characterization on NLST sub-set

- Cohort of 1737 patients (16249 nodules)
- Training set: 1239 patients (11676 nodules)
- Test set: 498 patients [330 benign, 168 malignant] (4573 nodules)

Deep Architecture with outstanding performance

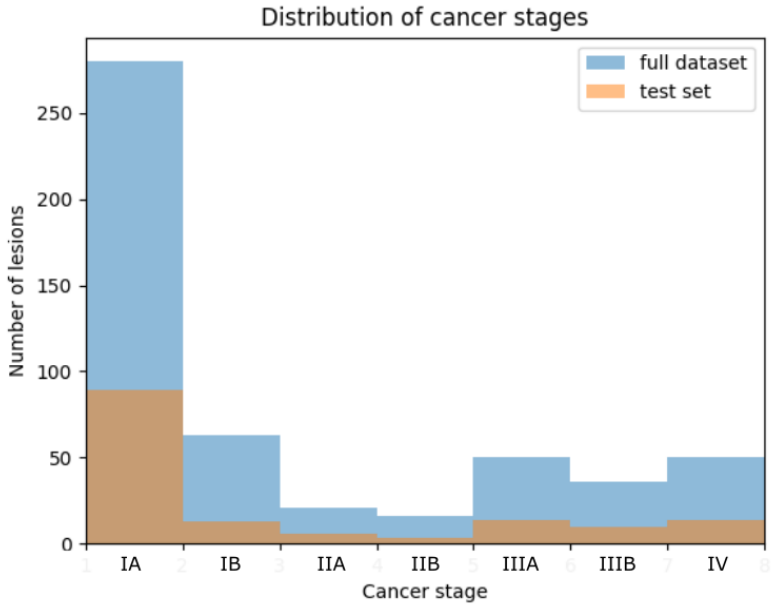
- **Test AUC = 0.99**
  - **Youden Index Operating Point✖: Sensitivity = 95.3 %, Specificity = 96.2 %**
  - **Operating point A: Sensitivity 98.6% at Specificity 80.2%**
  - **Operating point B: Sensitivity 97.3% at Specificity 91.4%**

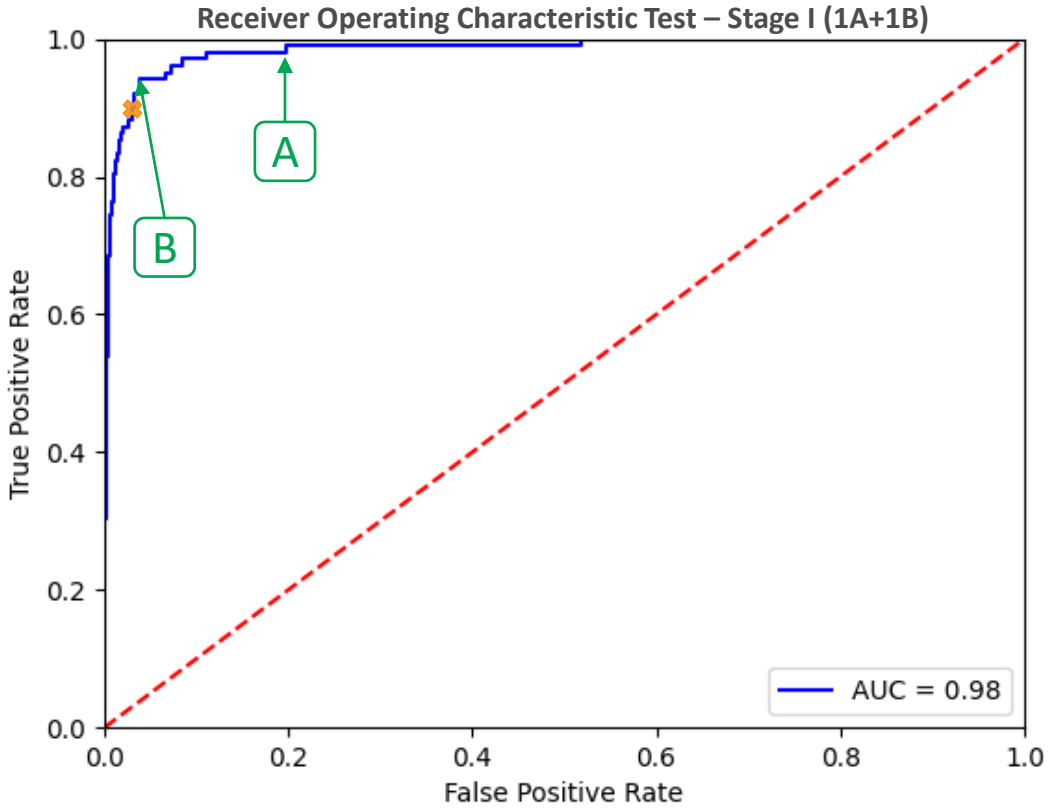


iBiopsy® Lung Cancer Screening

Stage 1 (1A+1B) Lung Cancer characterization performance

Unprecedented performance beyond the state of the art





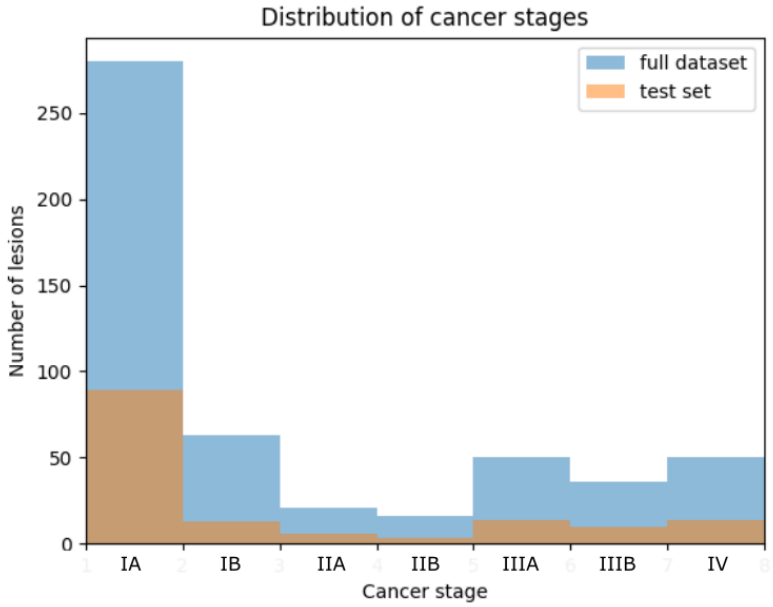
Test AUC = 0.984

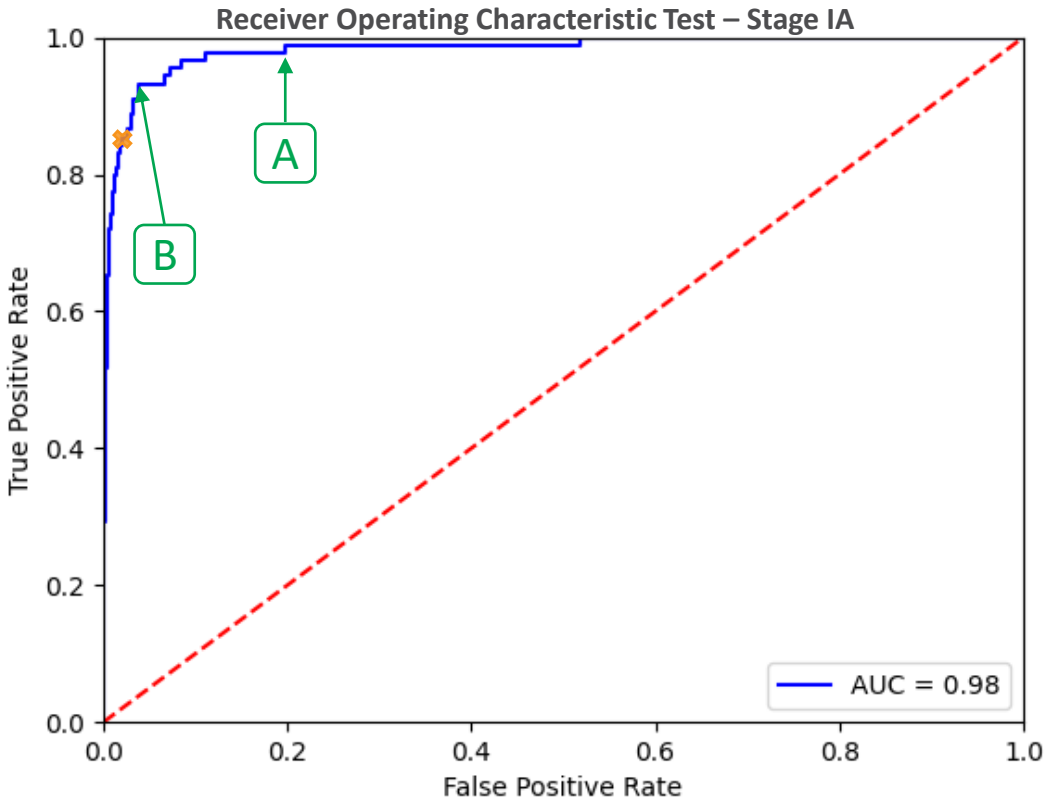
- **Youden Index Operating Point ✖: Sensitivity = 89.2 %, Specificity = 96.8 %**
- **Operating point A: Sensitivity 98% at Specificity 80.2%**
- **Operating point B: Sensitivity 93.1% at Specificity 96.2%**

iBiopsy® Lung Cancer Screening

Stage 1A Lung Cancer characterization performance

Unprecedented performance beyond the state of the art





Test AUC = 0.982

- **Youden Index Operating Point ✖: Sensitivity = 85.3 %, Specificity = 97.4 %**
- **Operating point A: Sensitivity 97.7% at Specificity 80.2%**
- **Operating point B: Sensitivity 92.1% at Specificity 96.2%**

Conclusion & Future Work

iBiopsy®

iBiopsy® Lung Cancer Screening is an AI-powered Software as a Medical Device that has demonstrated very promising results, that outperform the state of the art.

iBiopsy® LCS benefits:

- Fully automatic end-to-end imaging workflow support,
- Early pulmonary nodules identification leading to early treatment,
- False negative and false positive reductions,
- Unnecessary invasive procedure & healthcare spending reduction.

iBiopsy® LCS end-to-end results are expected in the coming weeks

iBiopsy® currently focuses on Lung Cancer Screening (LCS), Liver cancer early diagnosis (HCC), Liver cancer (HCC) recurrence prediction and Non-Alcoholic Steato Hepatitis (NASH) diagnosis and scoring.

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The Imaging Phenomics Company®

Thank you!

Meet us at booth #4849

AI Showcase | South Hall |Level 3

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REDEFINING RADIOLOGY

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