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LIONS PREY Outperforms Brock and Mayo Models in Nodule Malignancy Prediction in the HANSE Screening Implementation Trial

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Disclosure

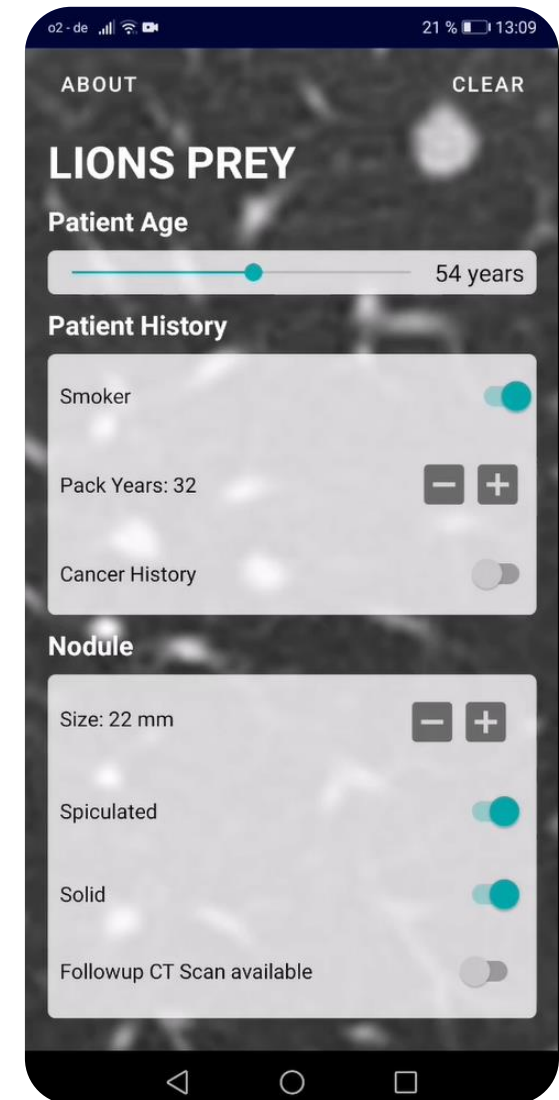
- Developer of malignancy prediction tool 'LIONS PREY'. An App download is available for free.
- No Artificial Intelligence (AI) was used.

Introduction

- Germany is entering the era of nation-wide lung cancer screening
- The German HANSE trial provides a real-world screening cohort (high-risk current or former smokers aged 55–79 yr)
- Brock and Mayo remain established—but imperfect—prediction models
- LIONS PREY^{1,2} (Lung lesION Score PREdicts malignancY) introduces a novel approach to malignancy prediction
- We validate LIONS PREY against Brock and Mayo in the screening setting of the HANSE cohort

¹ Doerr F., et al. Cancers (Basel). 2024

² Büscher E., et al. Respiration. 2026



Methods

- HANSE recruitment was completed between July 2021 and August 2022¹
- Nodules were classified as malignant or benign (Histology and Lung-RADS–based classification)²
- Head-to-head comparison of Brock, Mayo, and LIONS PREY at baseline
- Model performance was assessed by calibration and discrimination
- LIONS PREY uniquely incorporates nodule growth at follow-up



HANSE Studie

Holistic implementation study
Assessing a Northern
German interdisciplinary lung
cancer Screening Effort

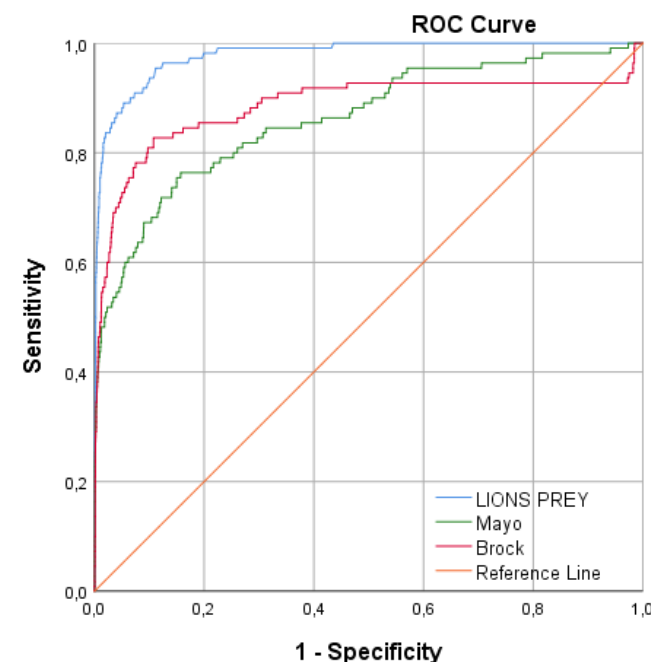
¹ Vogel-Claussen J., et al. Rofo. 2022

² Vogel-Claussen J., et al. Lancet Oncol. 2025

Results

- 5,191 participants and 30,746 pulmonary nodules longitudinally analyzed
- 111 lung cancers detected across two screening rounds
- LIONS PREY significantly outperforms Brock and Mayo at baseline
- Incorporating nodule growth further improves predictive accuracy of LIONS PREY (AUC: 0.982 [0.959-0.998])
- LIONS PREY and Mayo demonstrate excellent calibration (χ^2 : 10.068; p: 0.205 and χ^2 : 10.999; p: 0.263). Brock is miscalibrated (χ^2 : 46,174; p<0.001)

Screening setting	Discrimination		
	AUC	95%-CI	DeLong p-value
Baseline CT-scan			
LIONS PREY	0.979	0.968-0.989	0.041
Brock	0.885	0.837-0.933	
Mayo	0.862	0.820-0.903	



Discussion

- The limitations of the established models are illustrated by an example patient

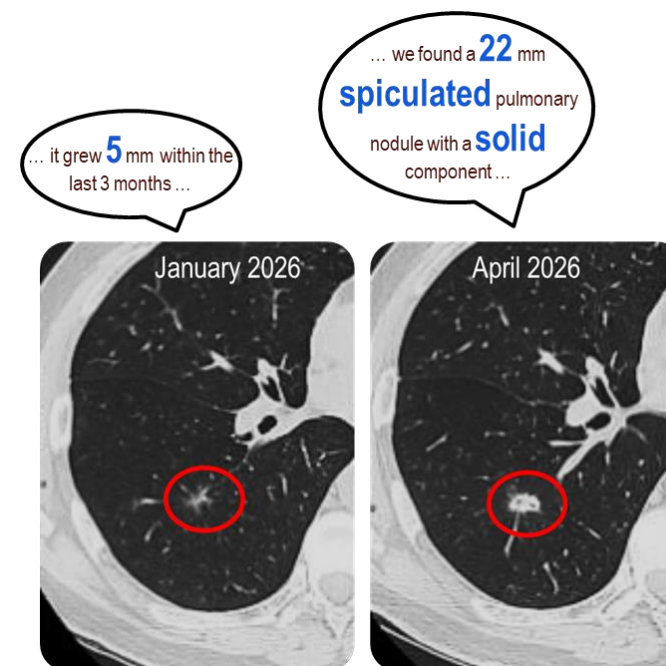
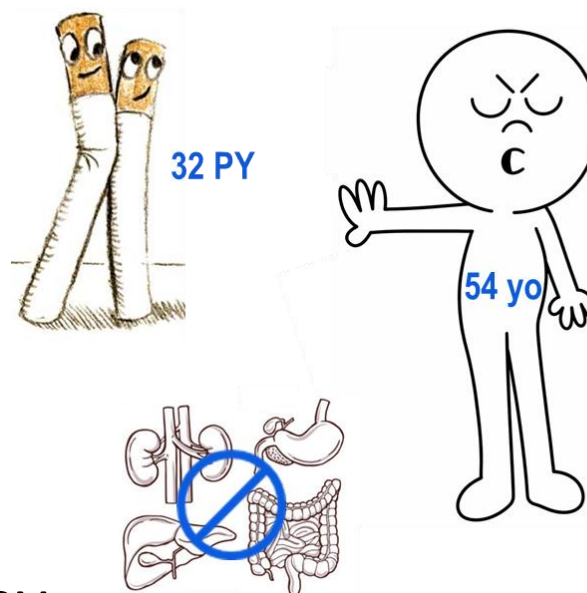
- Probability of malignancy:

LIONS PREY 95.3%

Brock 24.7%

Mayo 48.0%

- Histopathology confirmed stage IA3 lung adenocarcinoma
- Both established models do not consider nodule growth, a key indicator of malignancy



Conclusion

- By considering nodule growth, LIONS PREY brings longitudinal risk prediction to lung cancer screening
- LIONS PREY outperforms established models such as Brock and Mayo
- The LIONS PREY App is freely available for download



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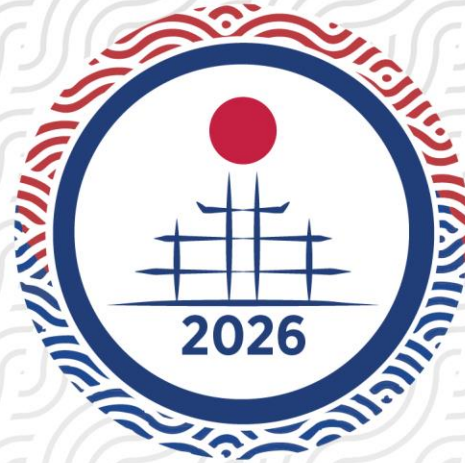
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Thank You.