

The background of the slide is a histological image of tissue, likely stained with hematoxylin and eosin (H&E). It shows glandular structures with varying degrees of cellular atypia and architectural disorganization, characteristic of a neoplastic process. The text 'VAI.P' is overlaid in white on the left side of the image.

VAI.P

Validation
Platform for AI in
Pathology Imaging

VAI.P

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Platform for AI in
Pathology Imaging

Affiliations

- Kevin Sandeman
 - Head of Unit, Pathology laboratory Malmö, Clinical genetics, pathology and molecular diagnostics, Medicinsk Service, Region Skåne



Background

- Artificial intelligence (AI) shows great potential
 - Registered products on the market
 - Barely any AI-innovations i clinical pathology: AI-algorithms show mainly local success
- Need for clinical general validation
 - Patient safety and clinical effectivity should be guaranteed
 - Lesser regions lack resources for validation process
- National cooperation to share the resources with the inclusion of lesser laboratories
 - Design a national database with a rich variation of material necessary for validation

Our main goal is to promote acceptance for AI-solutions in the clinical workflow.

Background

- Vinnova/Medtech4Health financed project
- Support health care organizations in their responsibility to control effective and patient safe implementation of AI solutions
- National validation platform for AI
 - Guarantee validation capacity in health care and safe effective clinical implementation

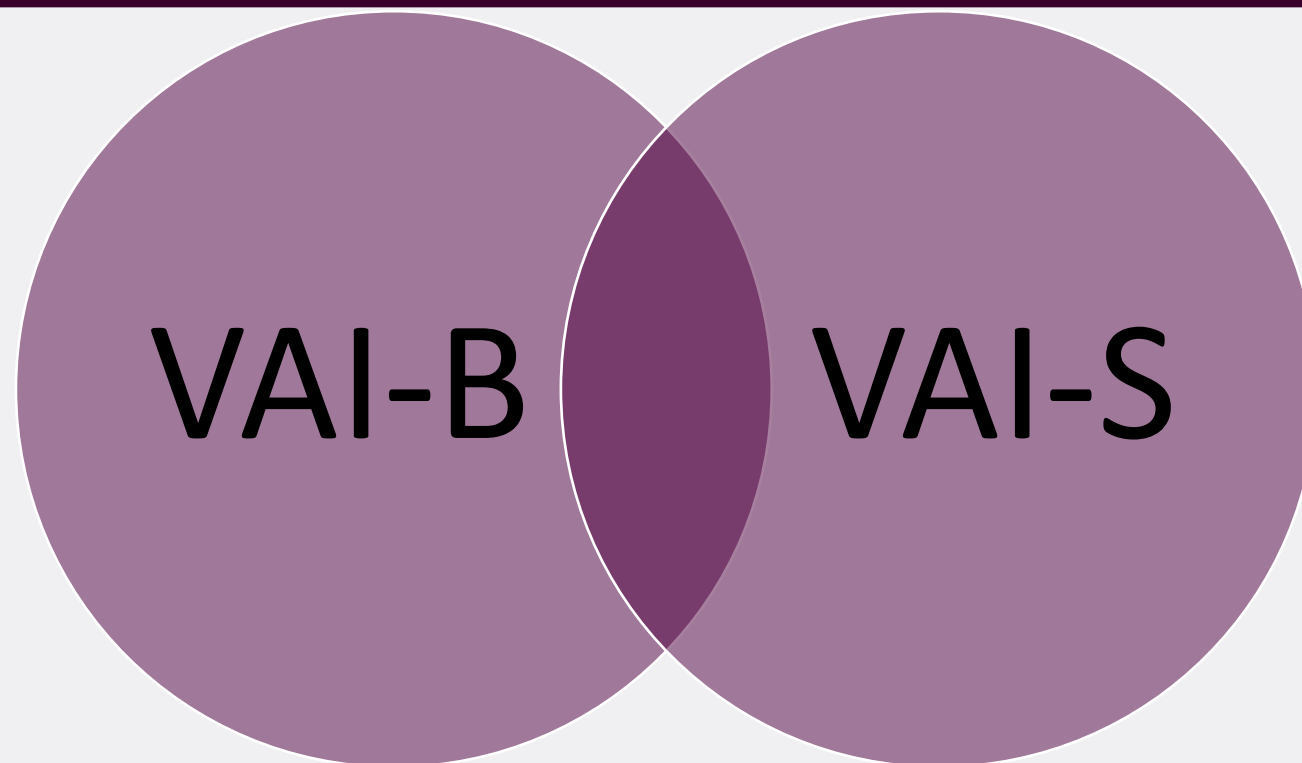
Three Validation Platforms for AI

VAI-B

Breast Imaging

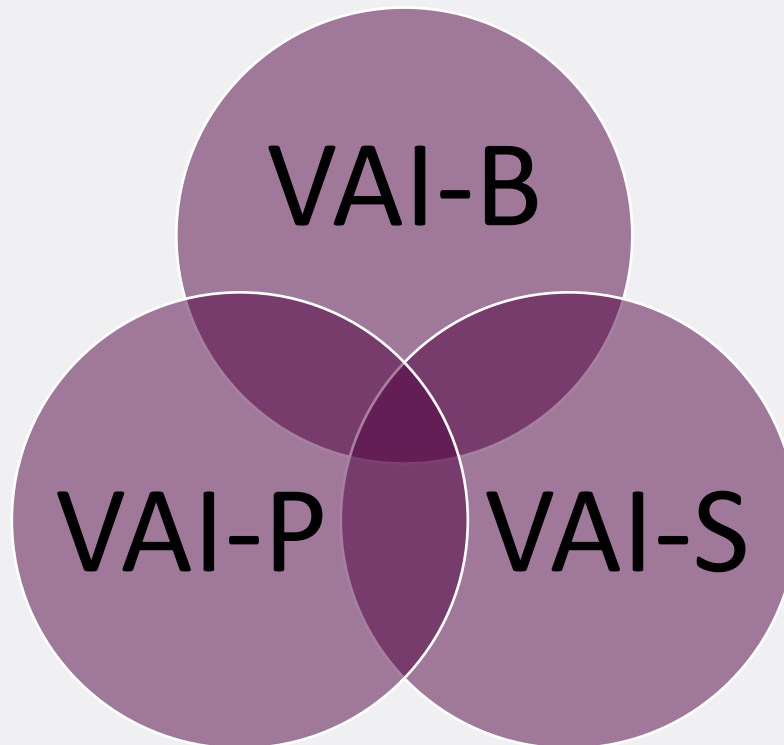


Three Validation Platforms for AI



Breast Imaging
Stroke Imaging

Three Validation Platforms for AI

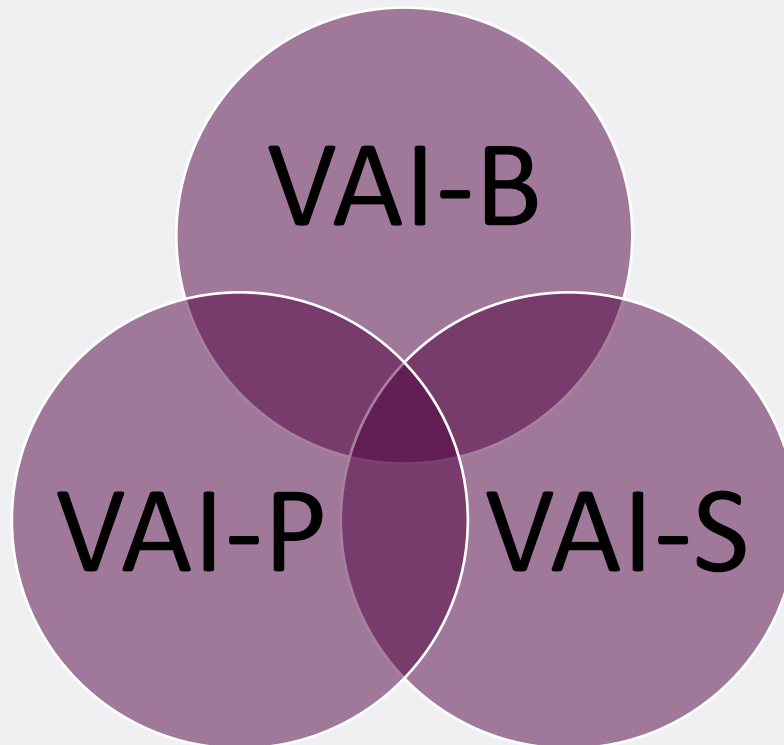


Breast Imaging
Stroke Imaging
Pathology Imaging

Three Validation Platforms for AI

Research Groups

- Karolinska Institutet
- Lunds University



Breast Imaging
Stroke Imaging
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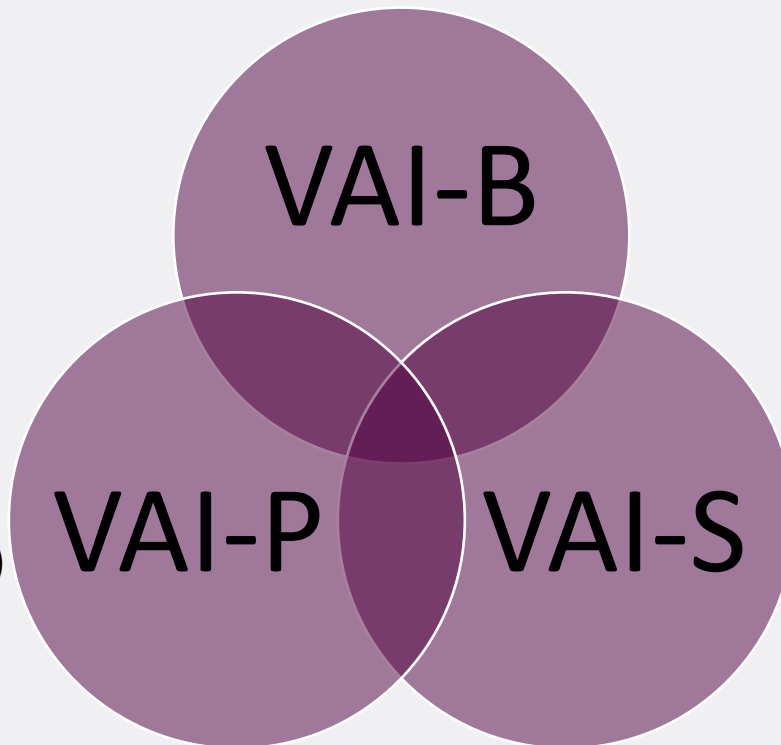
Three Validation Platforms for AI

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Steering committee

- Nationella Programområdet (NPO)
Medicinsk Diagnostik
- Regionala Cancercenter (RCC)



Breast Imaging
Stroke Imaging
Pathology Imaging

Three Validation Platforms for AI

AIDA

Analytic Imaging
Diagnostics Arena

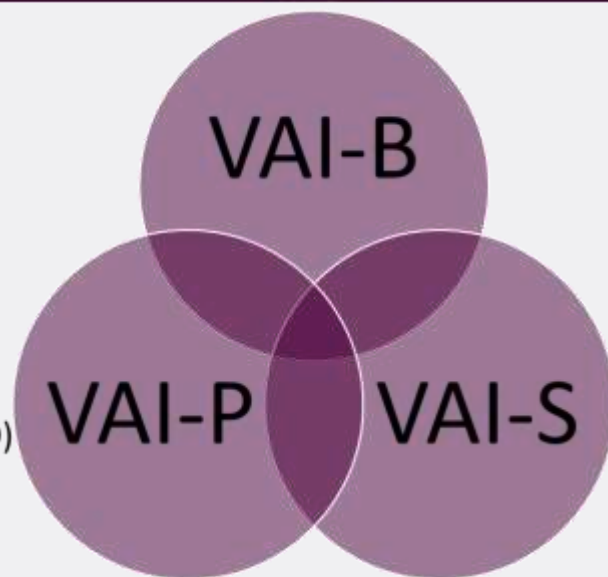
Incubator

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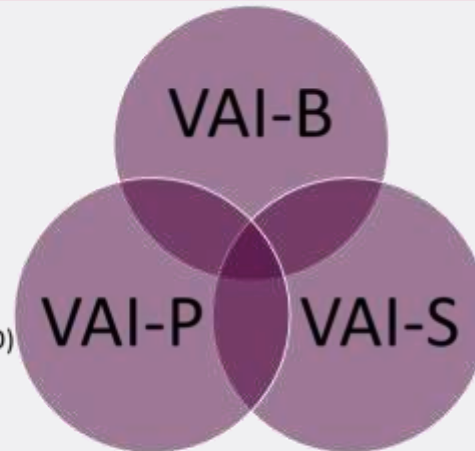
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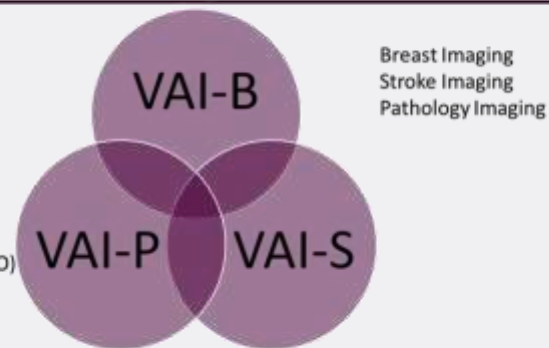
VINNOVA

Medtech
4!Health

AIDA
Analytic Imaging
Diagnostics Arena
Incubator

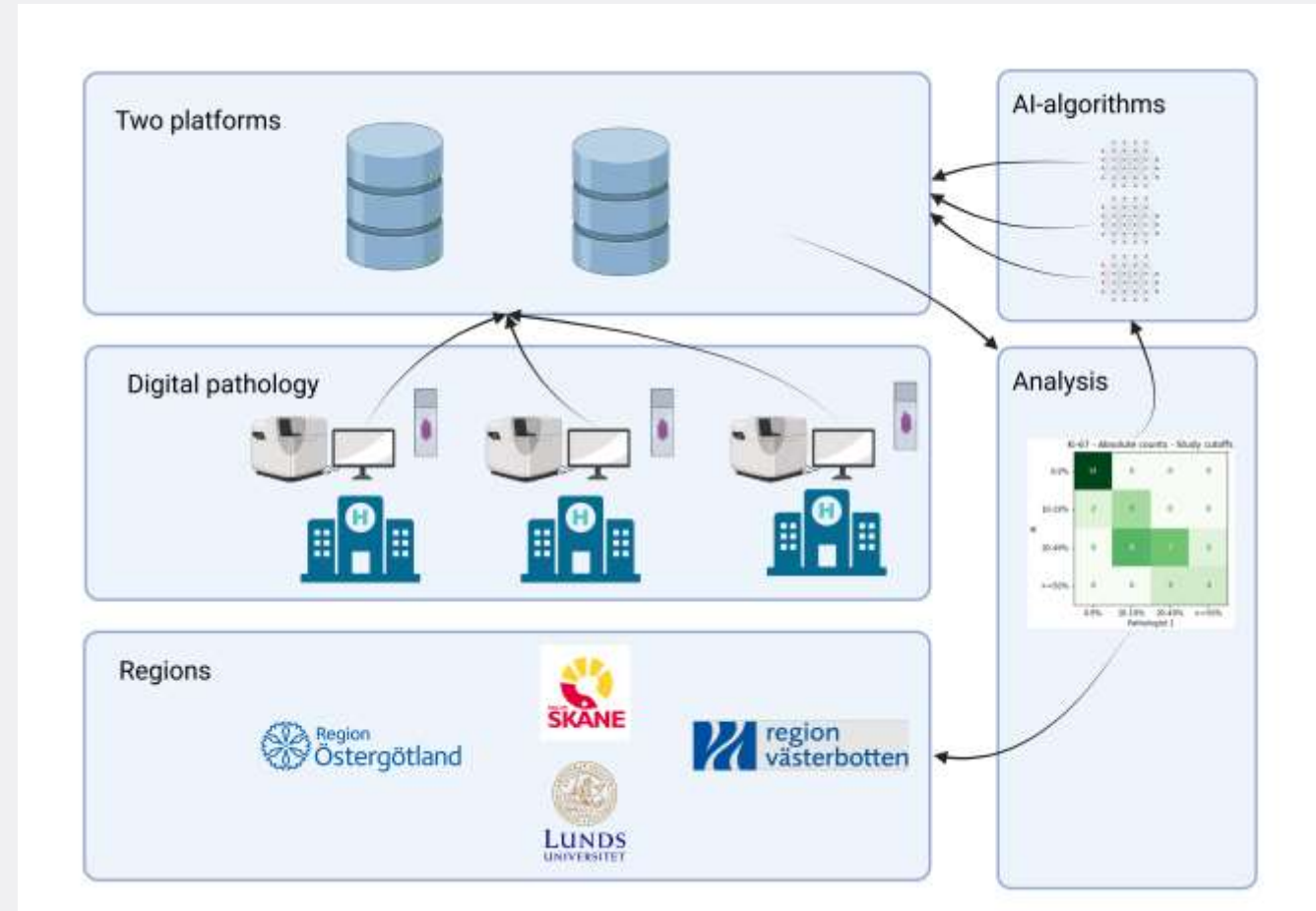
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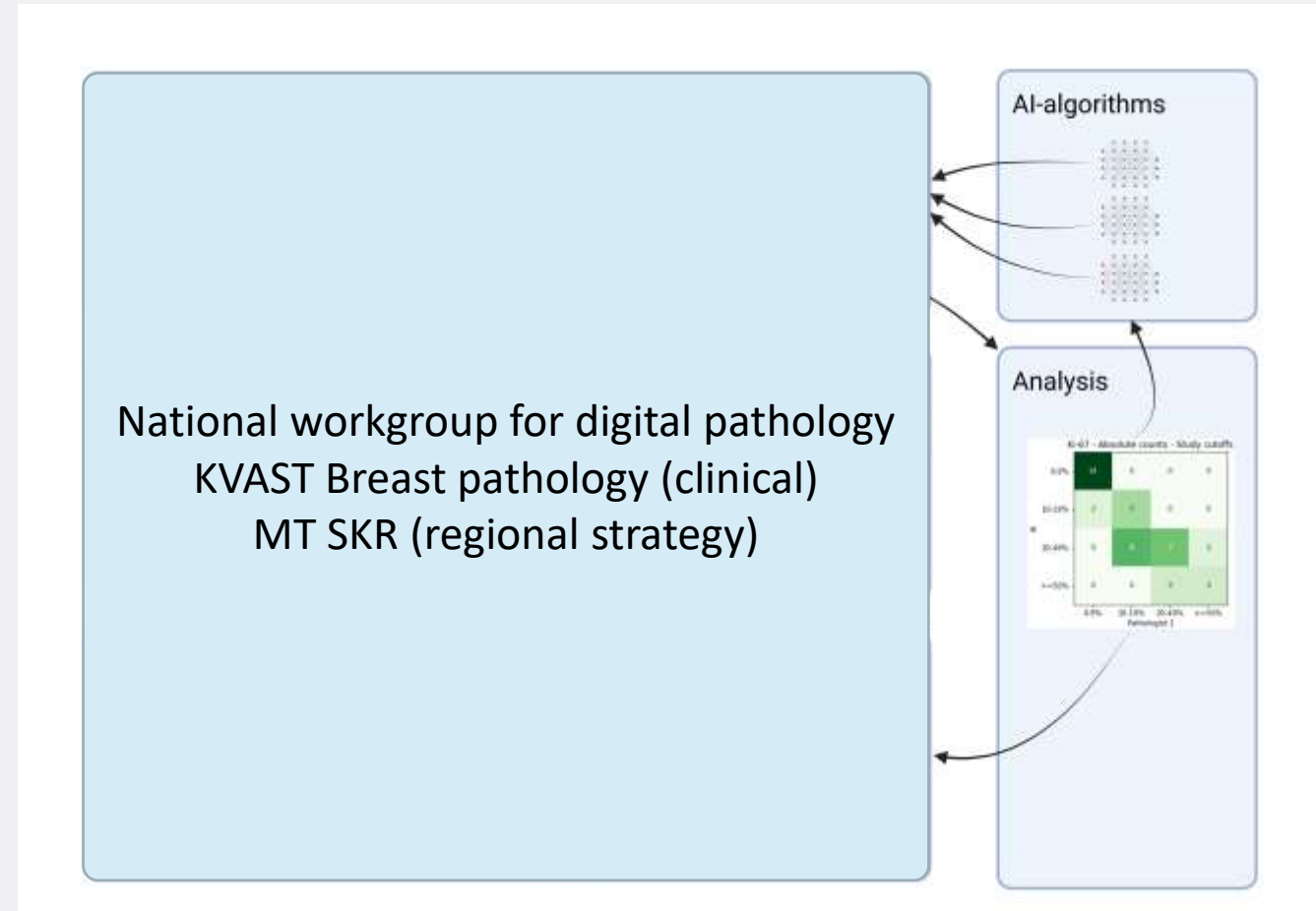
VAI-P

- Test
 - 2 secure platforms
 - Upload of data
 - AI-implementations
 - Data analysis, surveillance and reporting strategies
- Academic question
 - Ki67 implementation



VAI-P

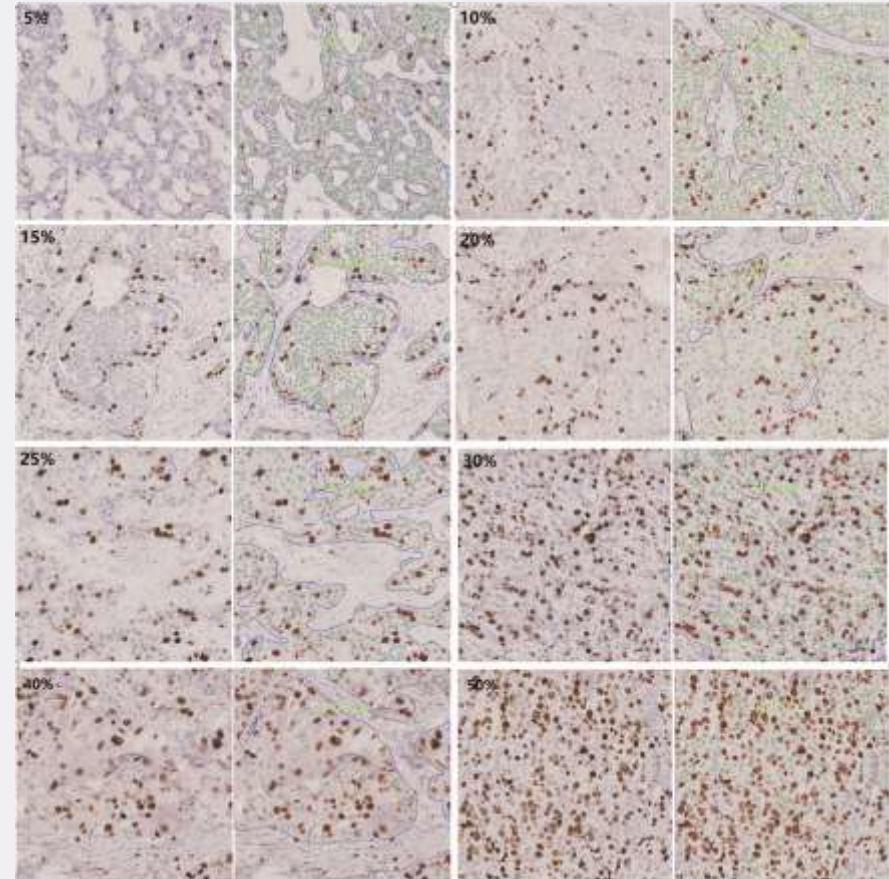
- Test
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Academic Question:

- Clinical challenges
 - Interobserver variation
 - Global Ki67 takes +/- 9 min per case
- AI promises
 - Less interobserver variation
 - Faster calculation (10-20x faster)

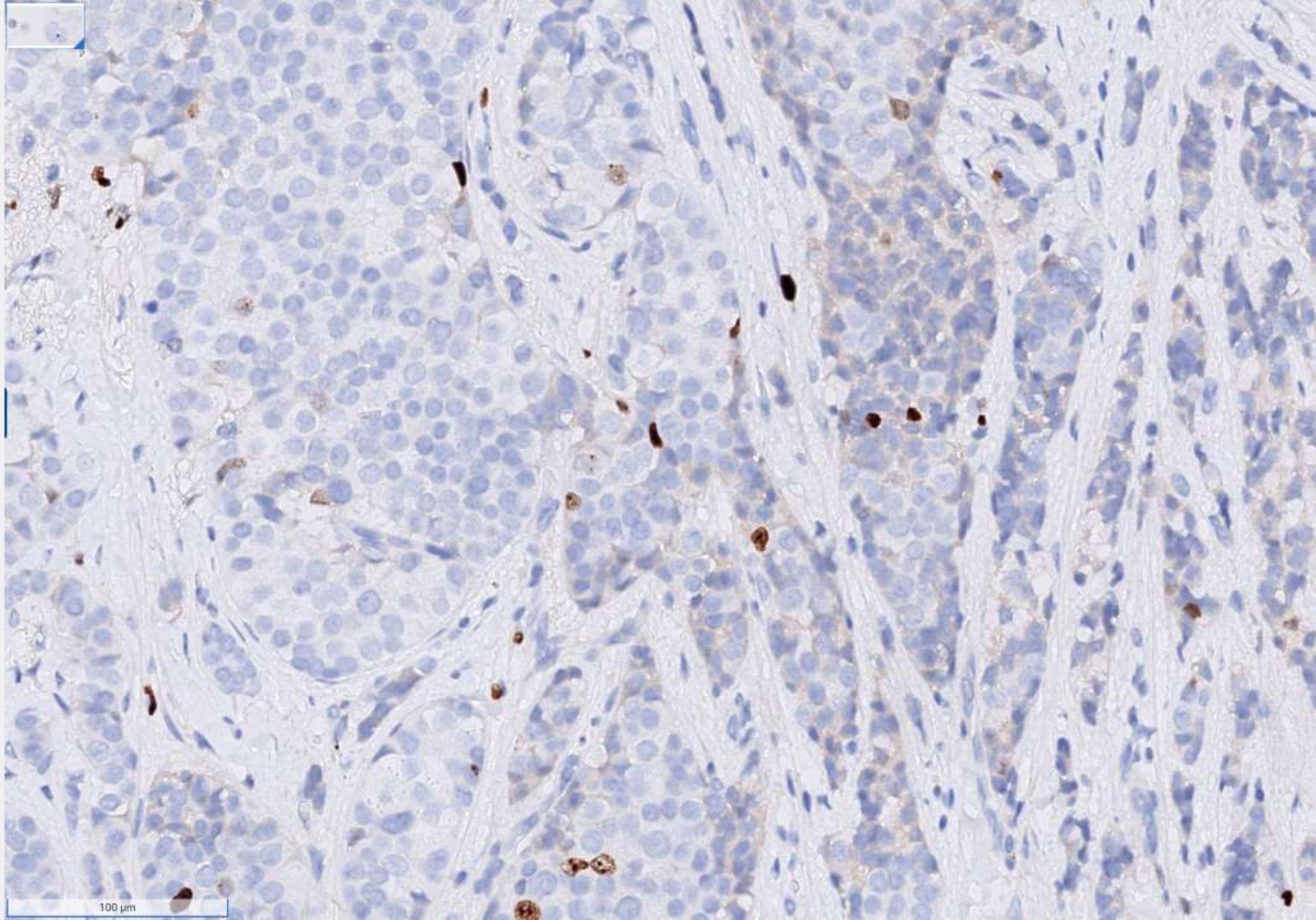
Ki67 implementation

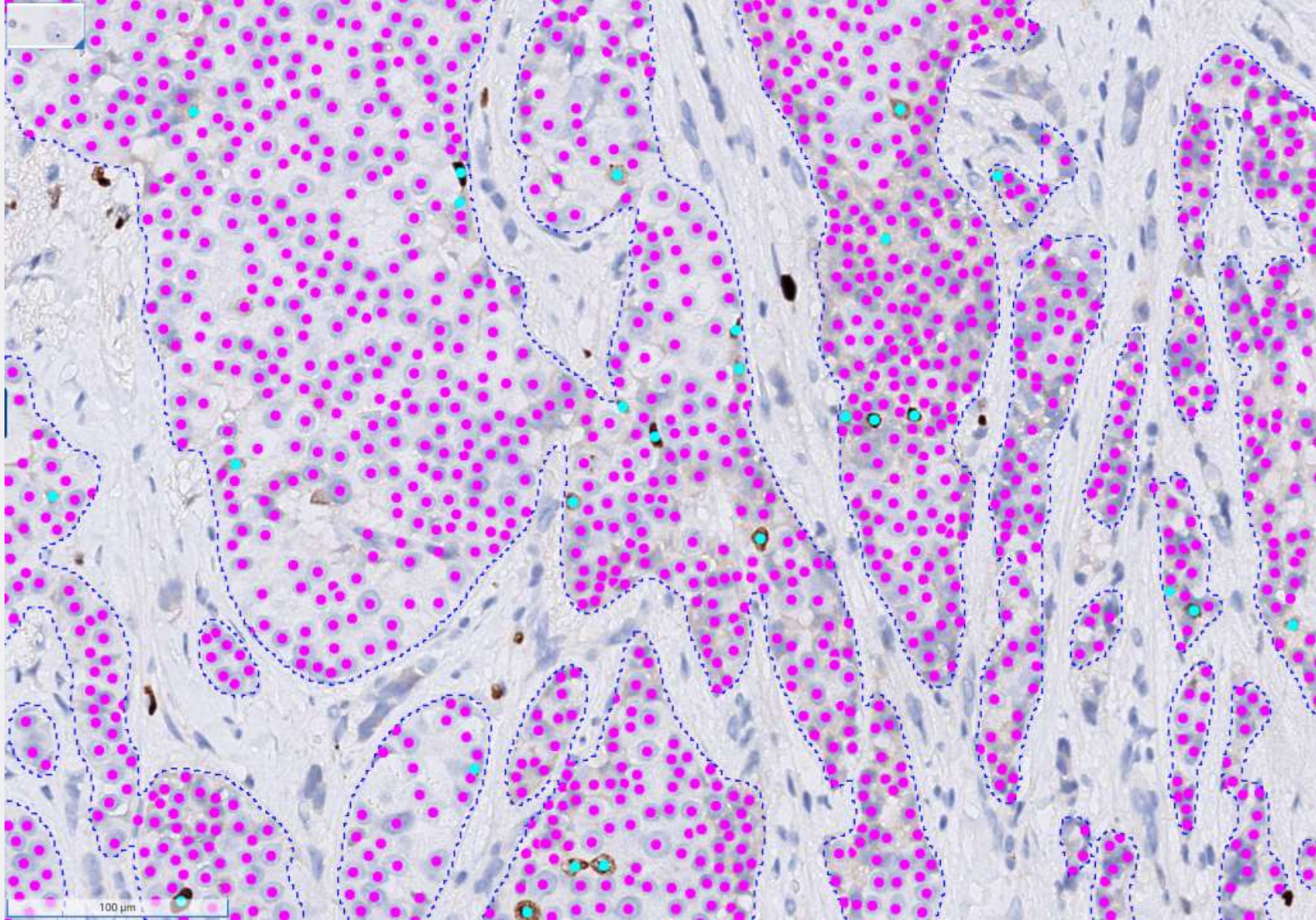


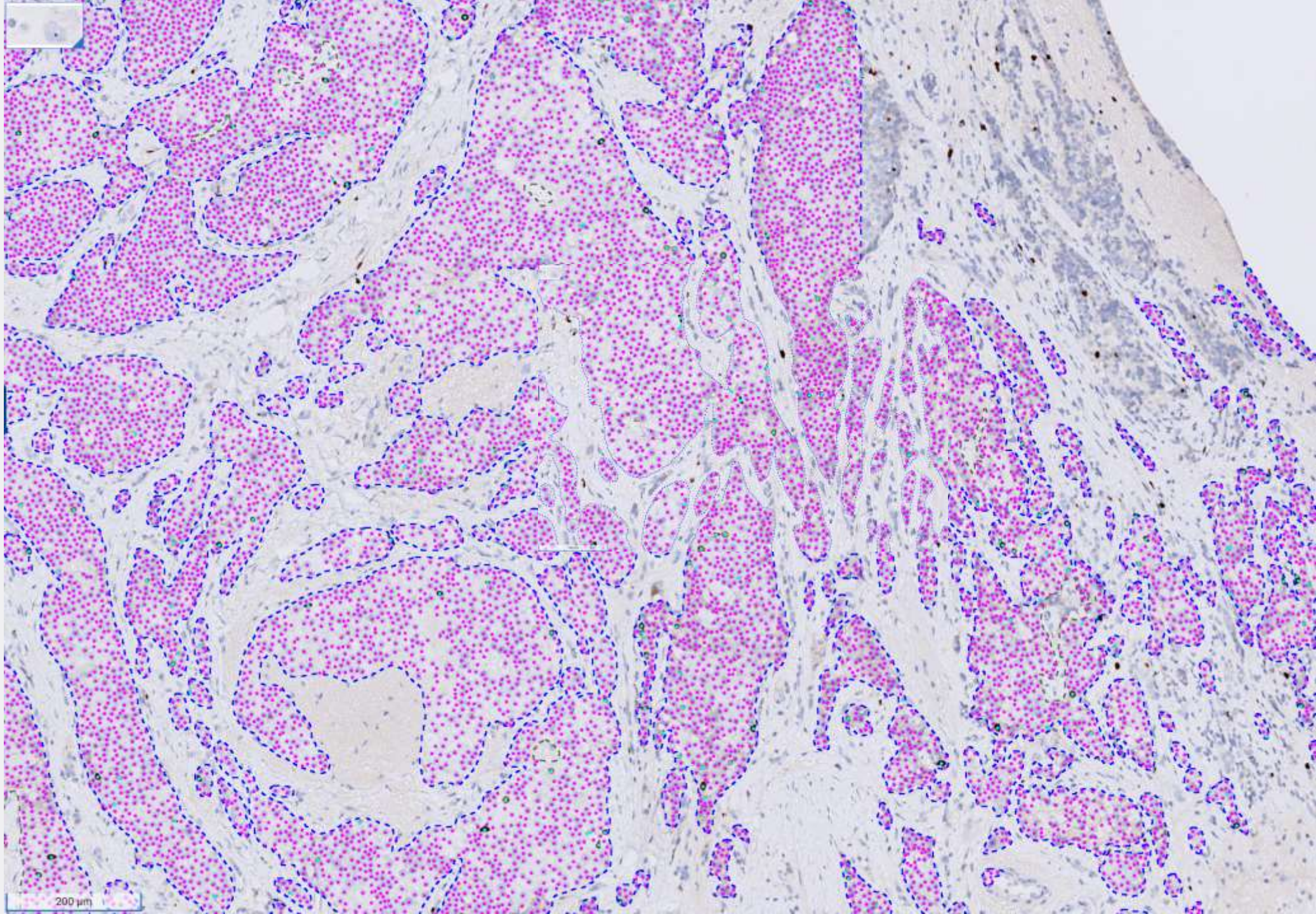
Li, L., Han, D., Yu, Y. et al. Artificial intelligence-assisted interpretation of Ki-67 expression and repeatability in breast cancer. *Diagn Pathol* 17, 20 (2022). <https://doi.org/10.1186/s13000-022-01196-6>

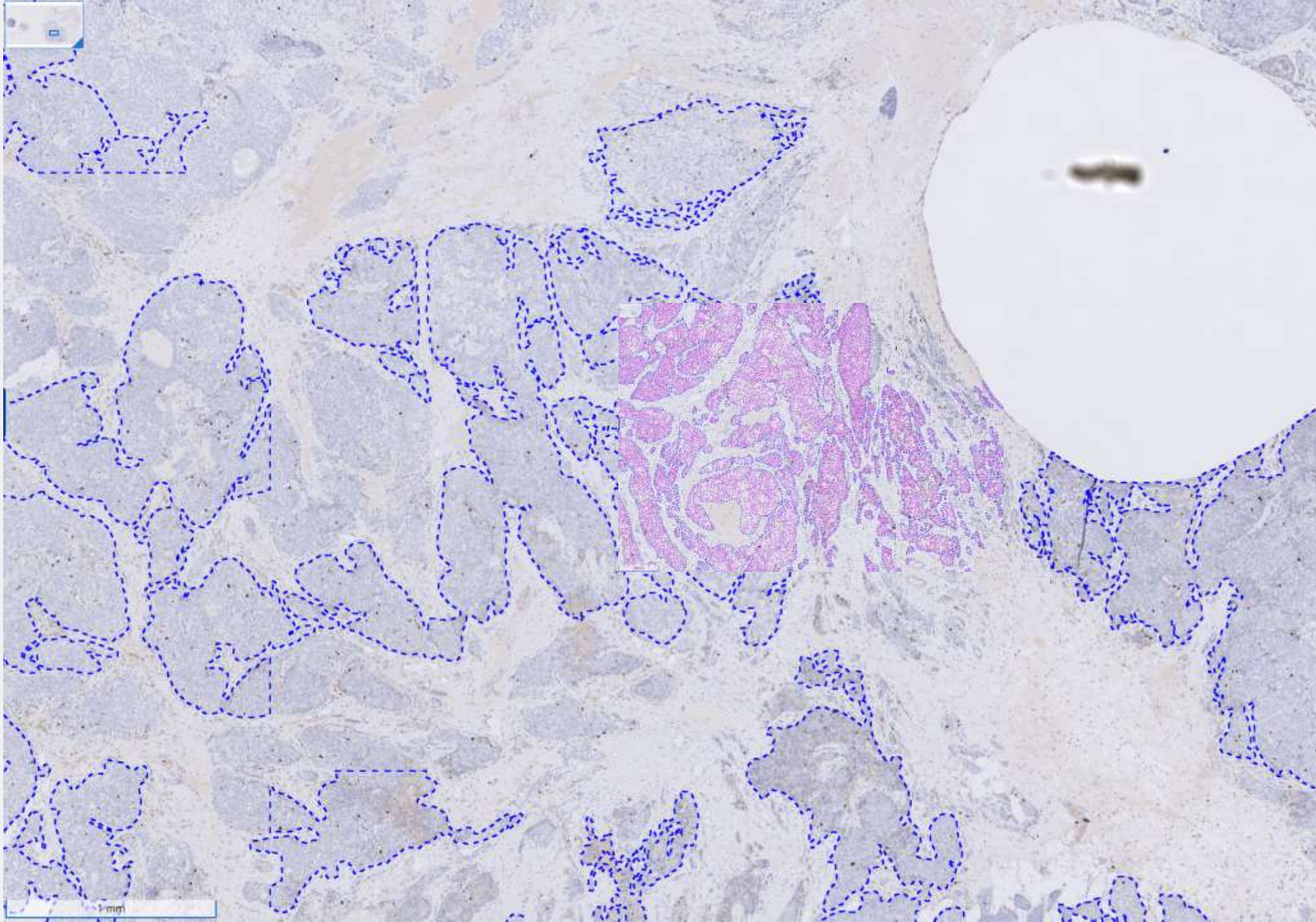
Explainability

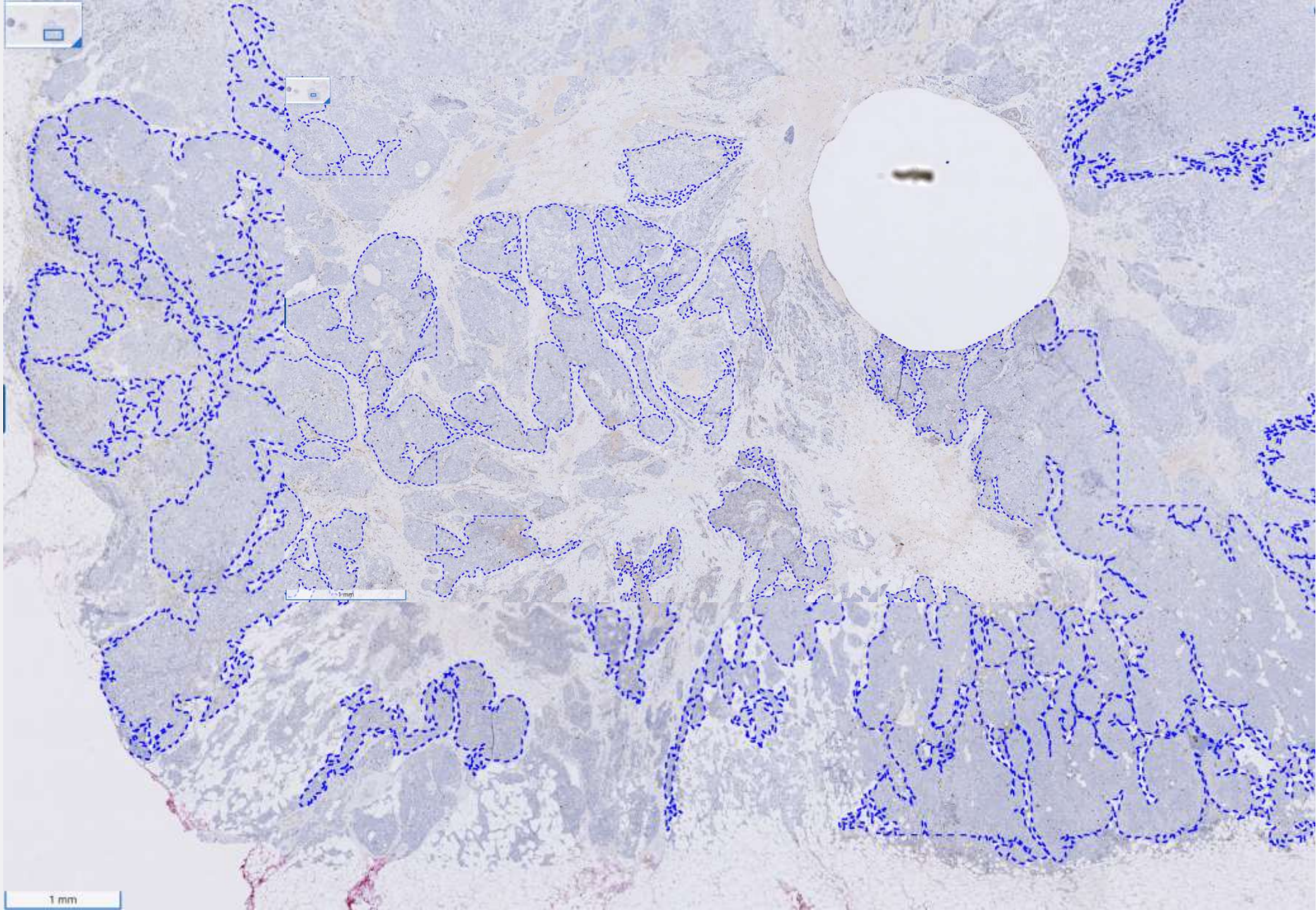
- Central for pathologists in their workflow
 - In comparison to HE and IHC slides

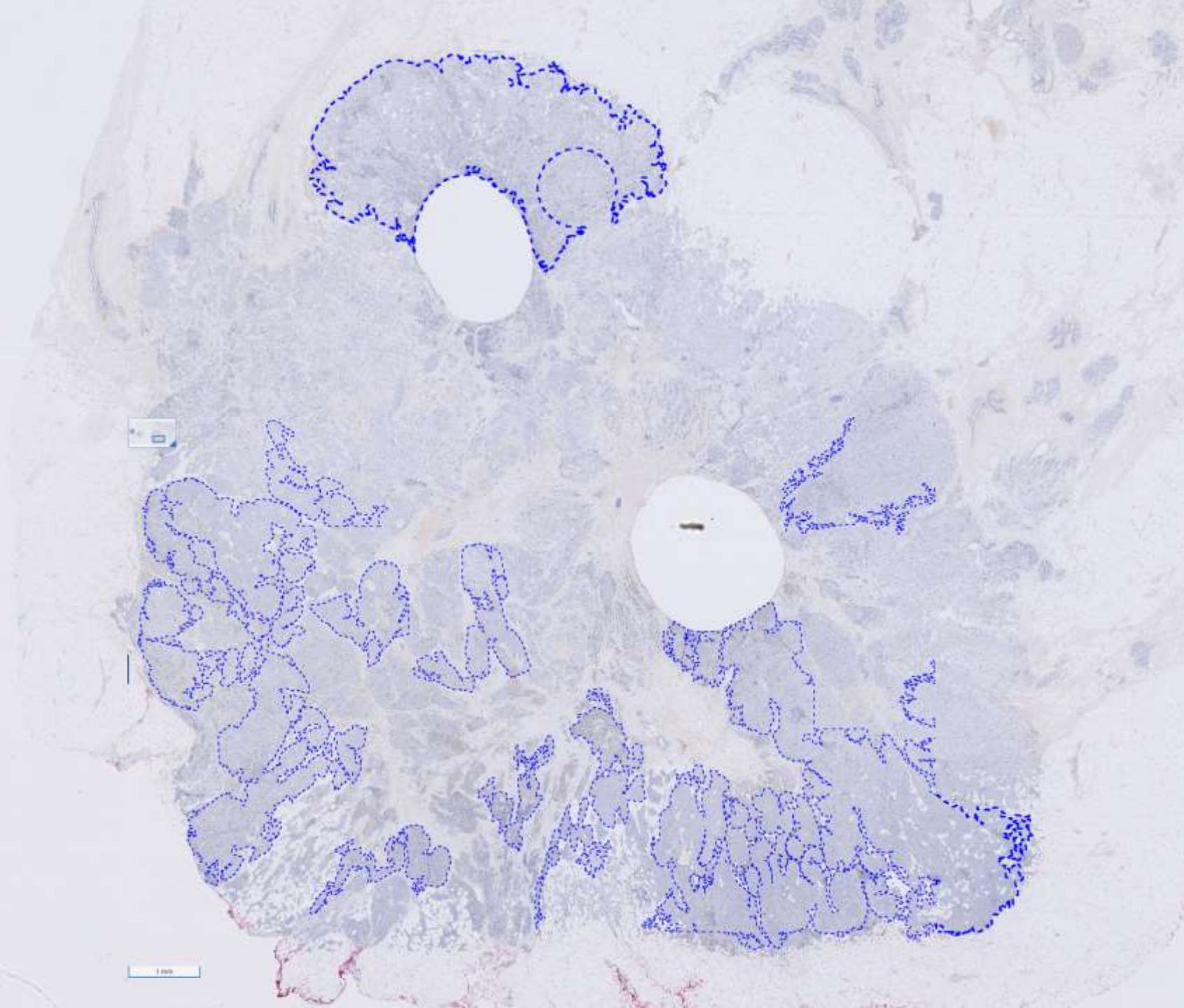








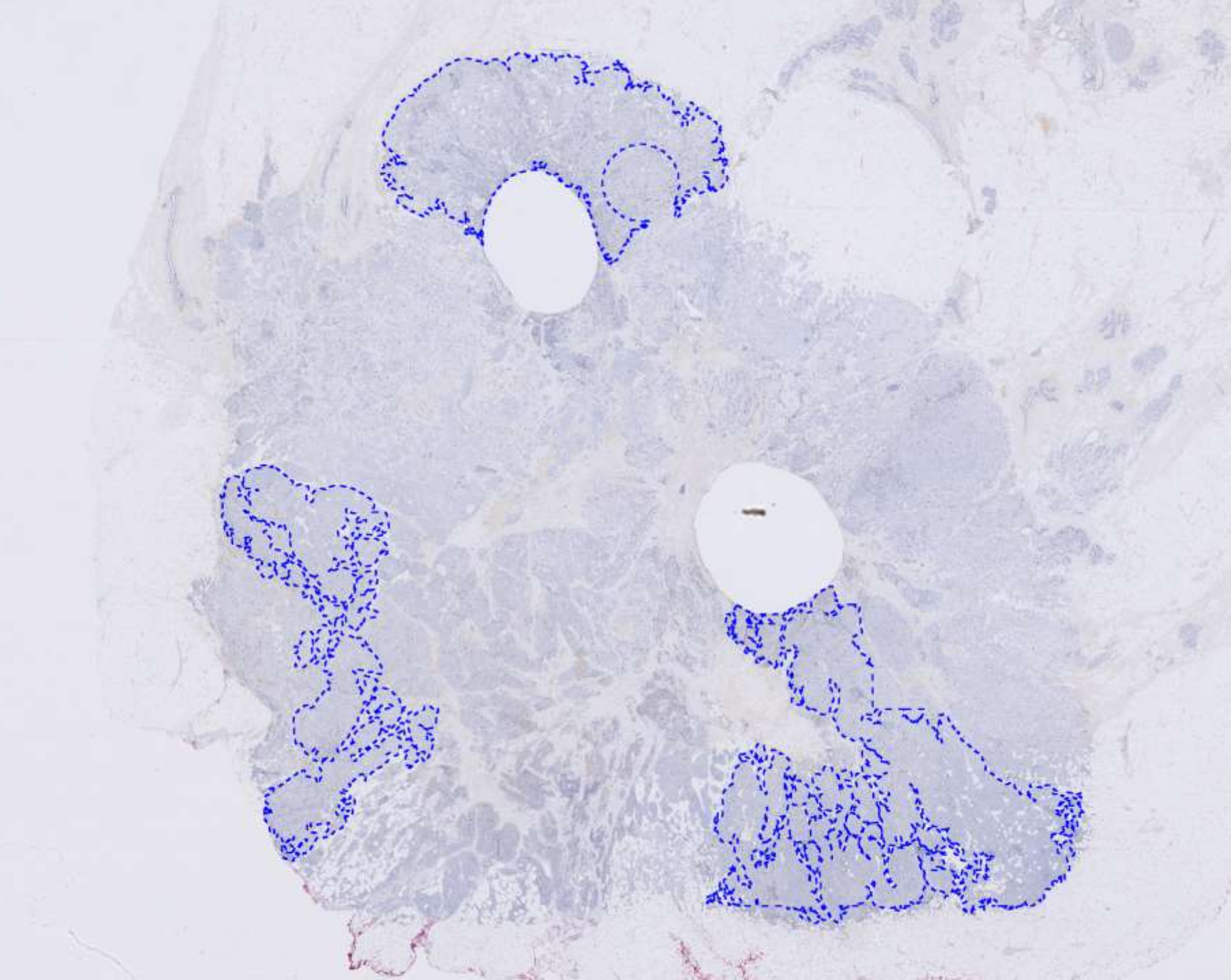




VAI.P

2 mm

1 mm





Cooperations

Regions/Universities	Pathology Platforms	AI-providers	Stakeholders
Skåne	Sectra	Aiforia	Vinnova/MedTech4Health
Östergötland	Proscia	Visiopharm	AIDA
Västerbotten			MT (SKR)
LU			KVAST

Progress

Achievements: Fall/ winter 2023

- Clinical validation studies
 - Data from five laboratories
 - 2 platforms
 - 2 AI-providers
 - 15 swedish pathologist with each 20 cases to assess
- Communication/interest between scandinavian laboratories

Goal: Spring 2024

- Final report

Questions/ Challenges

Ethical approval – continuous supervision of multiple AI-products

- Ethical approval for patient data management

Platform design has support for:

- automated data gathering and testing.
- easy integration of AI-products.
- validation against specific dependent parameters.

Clinical workflow is central

- Pathology competence is central
- Explainability for pathologists or strong validation by laboratory.
- Stepwise integration without central role for AI-results (prioritization).
- Feedback loop to retrain AI-solutions.



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