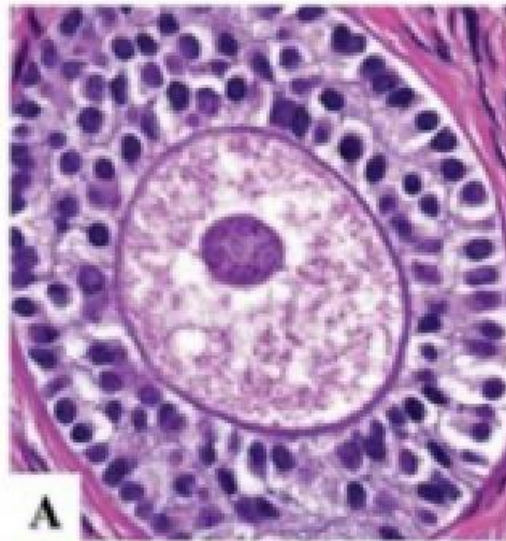
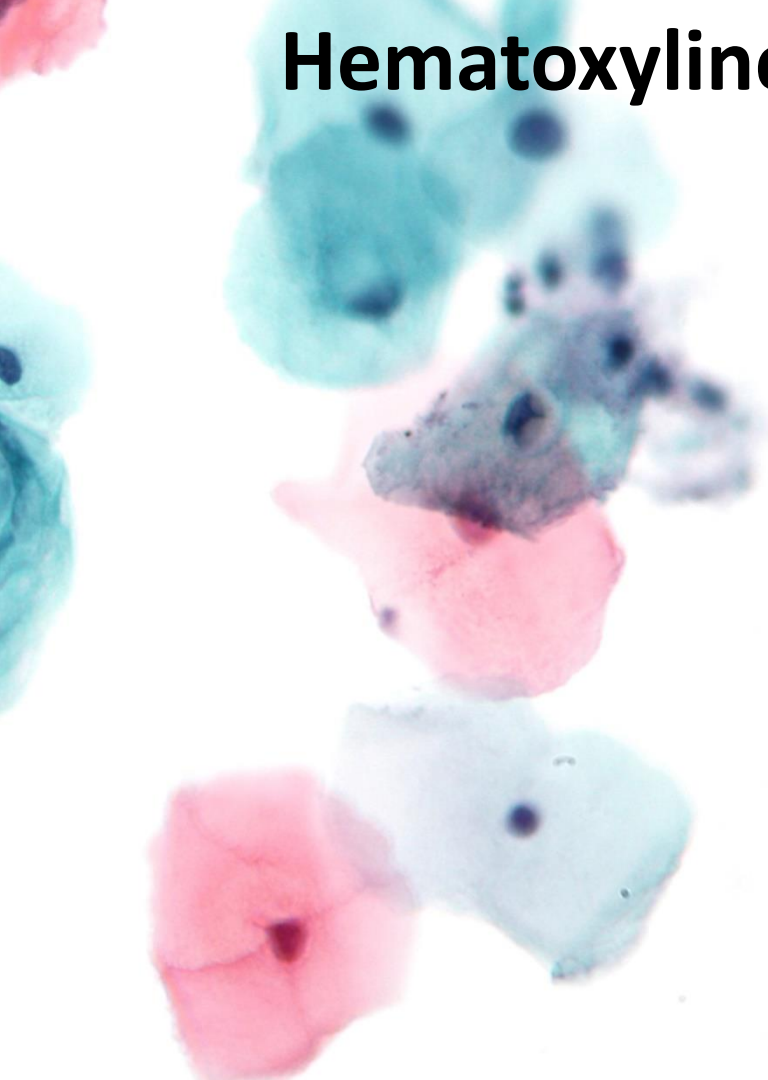


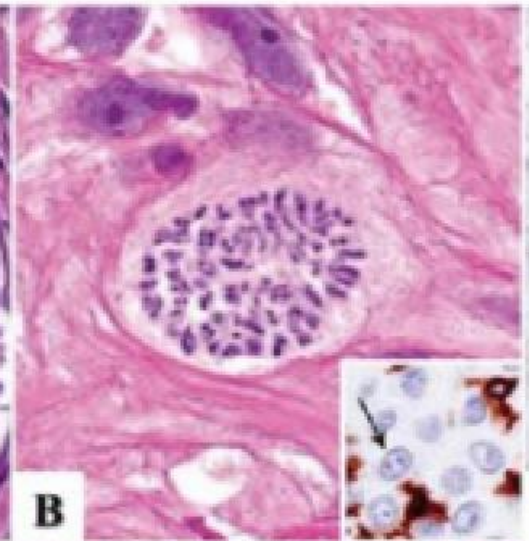


- Wat gebeurt er in de black box van de EBUS
- Willem Vreuls CWZ

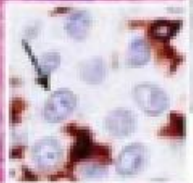
Hematoxyline



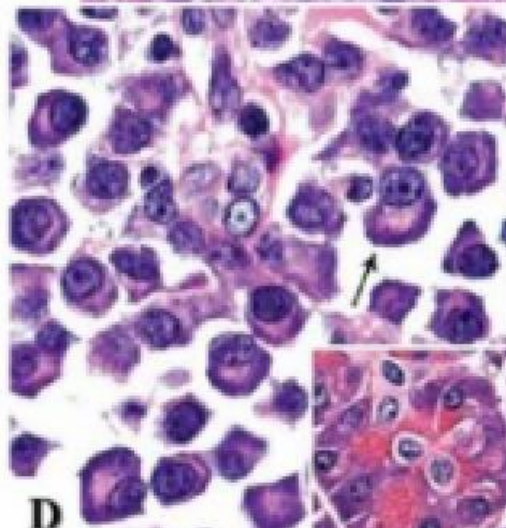
A



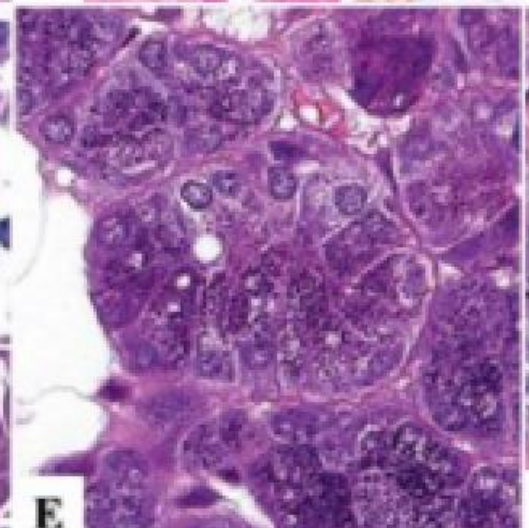
B



C



D



E



F

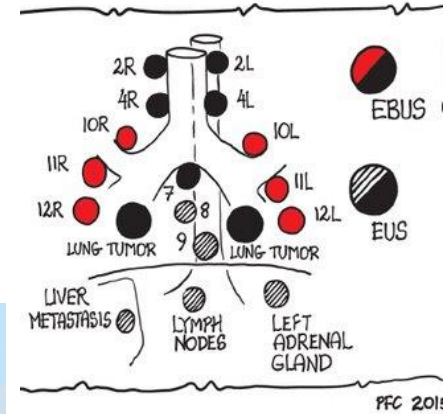
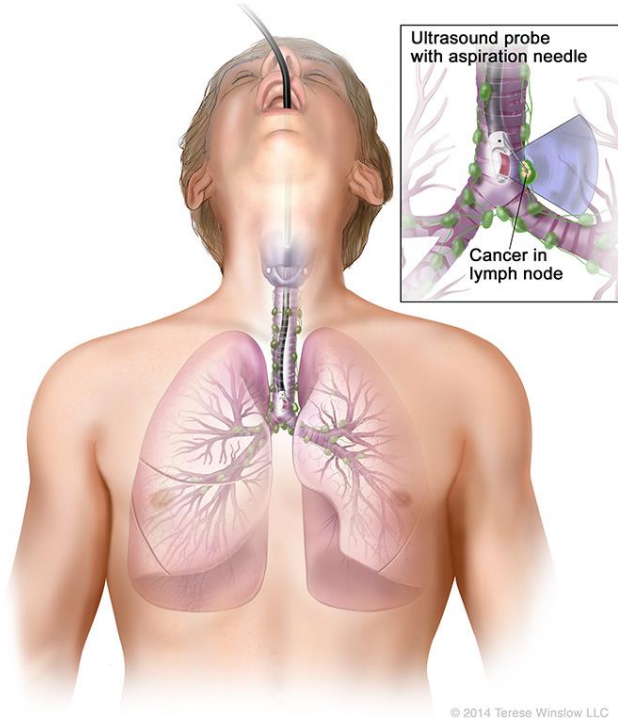


Mexico

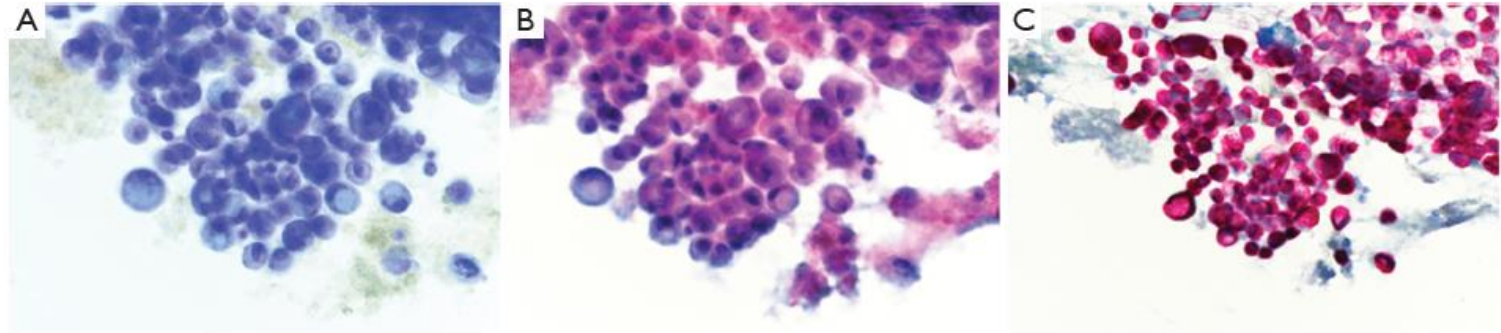




Endobronchiale Ultrasonie Transbronchiale Naaldaspiratie (EBUS-TBNA)



EBUS cytologie



Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA)—from morphology to molecular testing

Luisella Righi¹, Francesca Franzì², Francesca Montarolo¹, Gaia Gatti¹, Massimo Bongiovanni³, Fausto Sessa⁴, Stefano La Rosa³

ROSE



Restmateriaal in cel blok

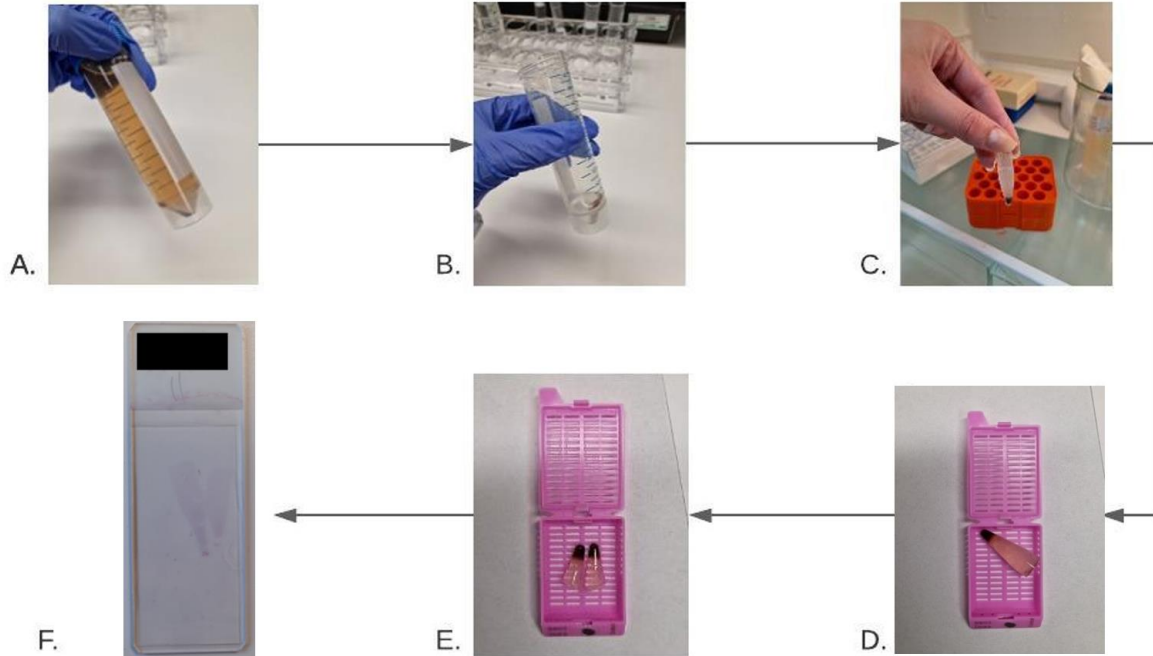


Table 1 Summary of cell block advantages and limitations.

Cell block method	Advantages	Limitations
Plasma Thrombin	Simple with relatively good morphology and cellularity Relatively quick and accommodates high workloads Clean background Suitable for IHC	Will not work well if the sample was collected in a fixative such as formalin Use of expired plasma can lead to unpredictable, inconsistent clotting and uneven concentration of cells Risk of specimen loss upon decanting Possibility of contaminating DNA from donor plasma potentially limiting molecular testing
Agar-based methods (including HistoGel)	Good morphology Relatively quick and accommodates high workloads Suitable for IHC and molecular studies	Relatively poor yield due to issues involving: - Agar inconsistencies, including variation in ideal amount for properly congealing while not diluting the cellular material and deterioration over time - Uneven distribution of cells within the conical tube with material concentrating at the tip - Poor visualization of the cell pellet at sectioning Possible heat artifact from molten agar if not cooled appropriately Difficult to remove gelled cell pellet leading to fragmentation
Agar-based methods (Cell-Gel)	As above + use of variably sized disposable base molds results in better distribution and concentration of cells relative to other agar-based methods	Some of the limitations as listed above remain but use of the base molds leads to improvements including greater cellularity
Collodion Bag	Relatively good morphology and cellularity, ideal for small volume and hypocellular samples Suitable for IHC and molecular studies	The use of an alcohol-based fixative (CytoRich Red) may lead to inconsistent IHC, necessitating revalidation Proper storage in a flame-proof cabinet and use in a laminar flow hood is needed as collodion is suspended in an ether-based solvent Technical skill needed Potentially time-consuming
Automated (Cellient)	Relatively good morphology and cellularity Fully automated so less labor and time consuming and eliminates operator variability Shorter preparation time (less than 1 h) Suitable for molecular studies	Increased costs as Cellient Processor and Cellient Finishing Station proprietary cassettes, filters, and reagents required Low throughput as only one CB can be produced at a time Use of alcohol-based fixative (PreservCyt) may lead to inconsistent IHC results, necessitating revalidation

• Enquete

EBUS Histologie *transbronchial needle capillary sampling (TBNCS)*”

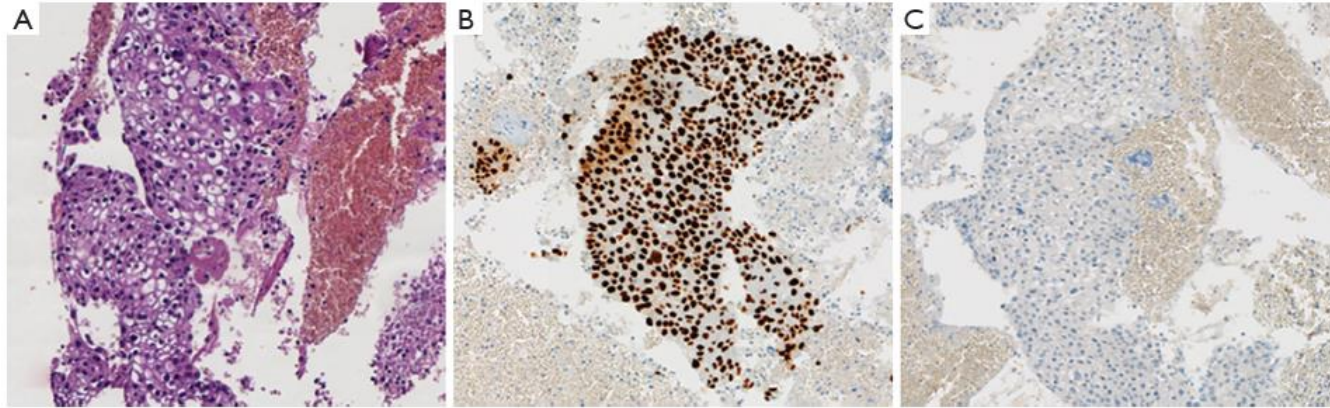


Figure 3 Histological biopsy of a lymph node with a metastasis from a pulmonary squamous cell carcinoma. Tumor cells show the typical features of a squamous cell carcinoma (A, ematoxilin & eosin, 100×). The diagnosis is confirmed by the immunoreactivity for p40 (B, immunostaining, 100×) and the lack of TTF1 expression (C, immunostaining, 100×).

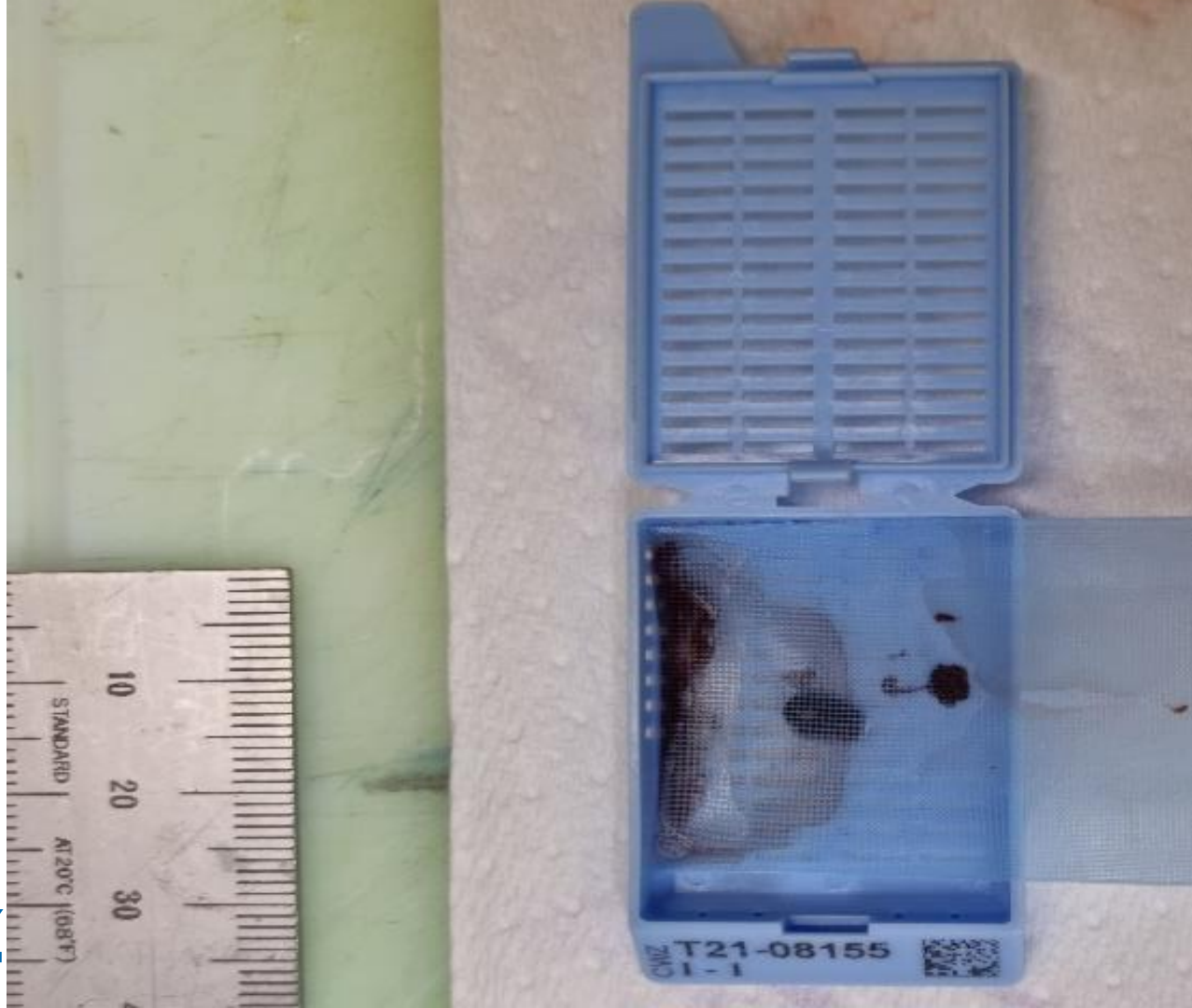
Situatie A

Materiaal komt alleen in ethanol binnen

Stolsels als FFPE

Restmateriaal Dunne laag cytologie PAP





VENTANA ALK (D5F3) CDx Assay

Interpretation Guide for Non-Small Cell Lung Carcinoma (NSCLC)

Fixatives other than NBF and Zinc formalin, including AFA, B5, and PREFER, also were tested and should not be used with the VENTANA ALK (D5F3) CDx Assay as the staining results were severely compromised. Intensity of VENTANA ALK (D5F3) CDx Assay was dramatically decreased under all time-points tested with AFA, B5, and PREFER fixatives. In addition, fixing in 95% alcohol for as little as one hour resulted in a significant negative impact to ALK staining intensity and should not be performed with this assay.

Situatie B

Longartsen 1^e pass in ethanol, overige passes in formaline

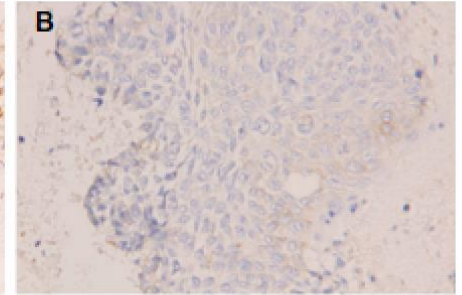
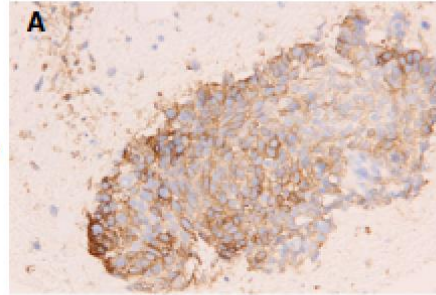
Stolsels als FFPE in 2 aparte cassettes

Restmateriaal Dunne laag cytologie PAP

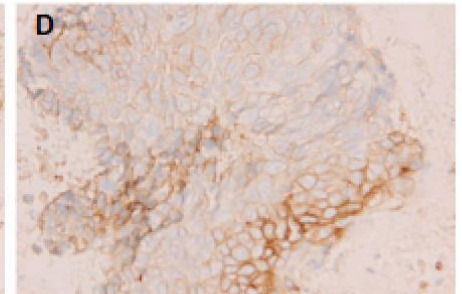
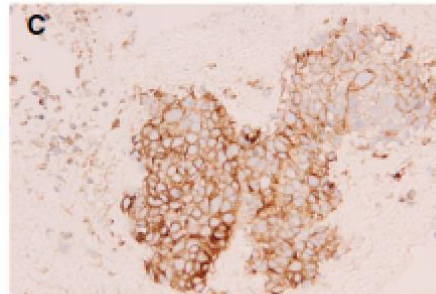
False-negative programmed death-ligand 1 immunostaining in ethanol-fixed endobronchial ultrasound-guided transbronchial needle aspiration specimens of non-small-cell lung cancer patients

Bregje M Koomen,¹ Willem Vreuls,² Mirthe de Boer,¹ Emma J de Ruiter,¹ Juergen Hoelters,³ Aryan Vink¹ & Stefan M Willems^{1,4}

22C3 LDT



SP263



Formalin

Fixcyt

Histopathology

Histopathology 2021, 79, 480–490. DOI: 10.1111/his.14373

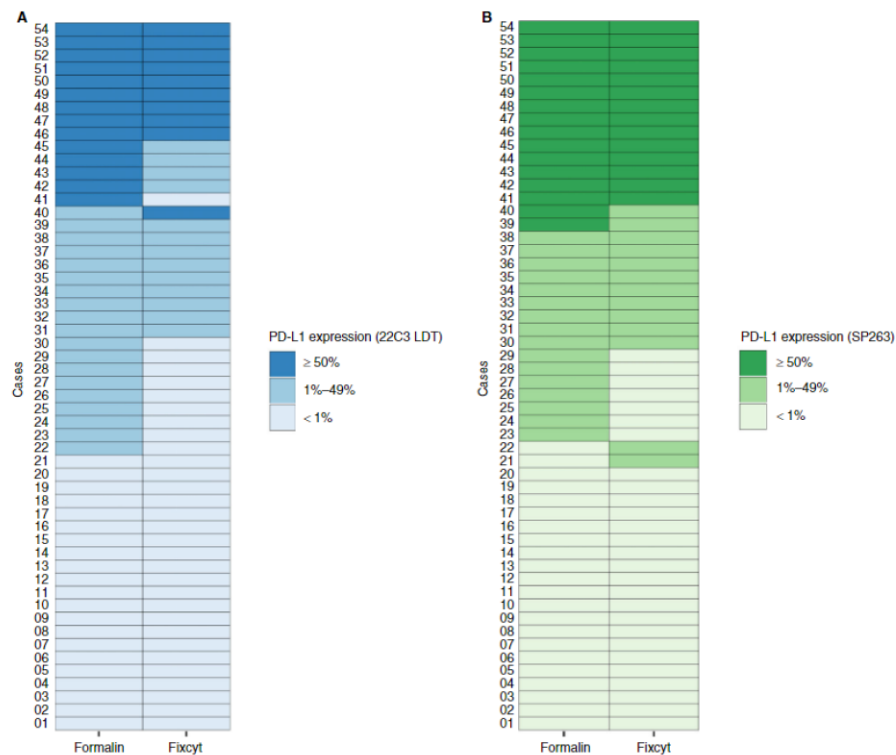


Figure 1. The programmed death-ligand 1 (PD-L1) tumour proportion score (TPS) in three categories for formalin-fixed and Fixcyt-fixed material per case, determined with the 22C3 laboratory-developed test (LDT) (A) and the SP263 standardised assay (B). Cases for which colours do not correspond showed discordant TPS values between formalin-fixed and Fixcyt-fixed material.

Situatie B en een beetje

- Bezuinigen in ziekenhuis, longarts vraagt wat kan ik minder aanvragen?

CWZ cytologie vs histologie

Variable*	Cytology	Histology
Benign	58,9% (103/175)	56,6% (99/175)
Suspicious	4,6% (8/175)	1,7% (3/175)
Malignant	31,4% (55/175)	37,1% (65/175)
No diagnosis/not representative	5,1% (9/175)	4,6% (8/175)
TOTAL	100%	100%

ROSE

Guideline for the Acquisition and Preparation of Conventional and Endobronchial Ultrasound-Guided Transbronchial Needle Aspiration Specimens for the Diagnosis and Molecular Testing of Patients with Known or Suspected Lung Cancer

Erik H.F.M. van der Heijden^a Roberto F. Casal^b Rocco Trisolini^c Daniel P. Steinfert^d

Respiration 2014;88:500–517

DOI: [10.1159/000368857](https://doi.org/10.1159/000368857)

- Geen vermindering turn around time of toename van diagnostic yield
- Wel minder puncties/ingrepen om tot diagnose te komen
- Wel optimale selectie van materiaal voor aanvullende technieken in celblok (longkanker, lymfoom, infectieus)

Trisolini [47] 2011	Prospective, experimental RCT	Enlarged mediastinal or hilar LN (n = 168)	TBNA + ROSE (n = 83)	TBNA (n = 85)	Diagnostic yield; secondary: biopsy sites	Yield: 78 vs. 75% (NS); adequate sample 78 vs. 87% (NS); number of TBB (IQR) 1 vs. 2 (p < 0.001); complication rate 6 vs. 20% (p < 0.05)	Good
Yarmus [48] 2011	Prospective, experimental RCT	Enlarged mediastinal or hilar LN (n = 68)	TBNA + ROSE (n = 34)	TBNA (n = 34)	Diagnostic yield; secondary: number of needle passes and procedure	Yield: 55 vs. 53% (NS); adequate sample 94 vs. 88% (NS); number of needle passes 4 vs. 4 (NS); number of TBB (NS); procedure duration time and amount of sedatives needed (NS); complication rate not reported; study was powered to detect differences in yield >30%	Fair

Table 3: The table shows which the discordant cases in diagnosis between histology and cytology. In total 17 cases where diagnosis between cytology and histology differ from each other. The most cases differ in a malignant

Discordanten

	Benign histology	Suspicious histology	Malignant histology	No diagnosis histology
Benign cytology		1	4	2
Suspicious cytology			6	
Malignant cytology		1		
No diagnosis cytology	2		1	

Table 3: The table shows which the discordant cases in diagnosis between histology and cytology. In total 17 cases where diagnosis between cytology and histology differ from each other. The most cases differ in a malignant

Discordanten

	Benign histology	Suspicious histology	Malignant histology	No diagnosis histology
Benign cytology		1	4	2
Suspicious cytology			6	
Malignant cytology		1		
No diagnosis cytology	2		1	

Situatie C

Materiaal komt alleen op formaline binnen, geen cytologie meer.
Opbrengst wisselt wel tussen longartsen.

Long arts X doet t anders dan Y en Z



The Clinical Respiratory Journal
Open Access

ORIGINAL ARTICLE

Comparing diagnostic sensitivity of different needle sizes for lymph nodes suspected of lung cancer in endobronchial ultrasound transbronchial needle aspiration: Systematic review and meta-analysis

Alejandra Yu Lee-Mateus, Juan C. Garcia-Saucedo, David Abia-Trujillo, Gonzalo Labarca, Neal M. Patel, Jorge M. Pascual, Sebastian Fernandez-Bussy

First published: 16 August 2021 | <https://doi.org/10.1111/crj.13436> | Citations: 2

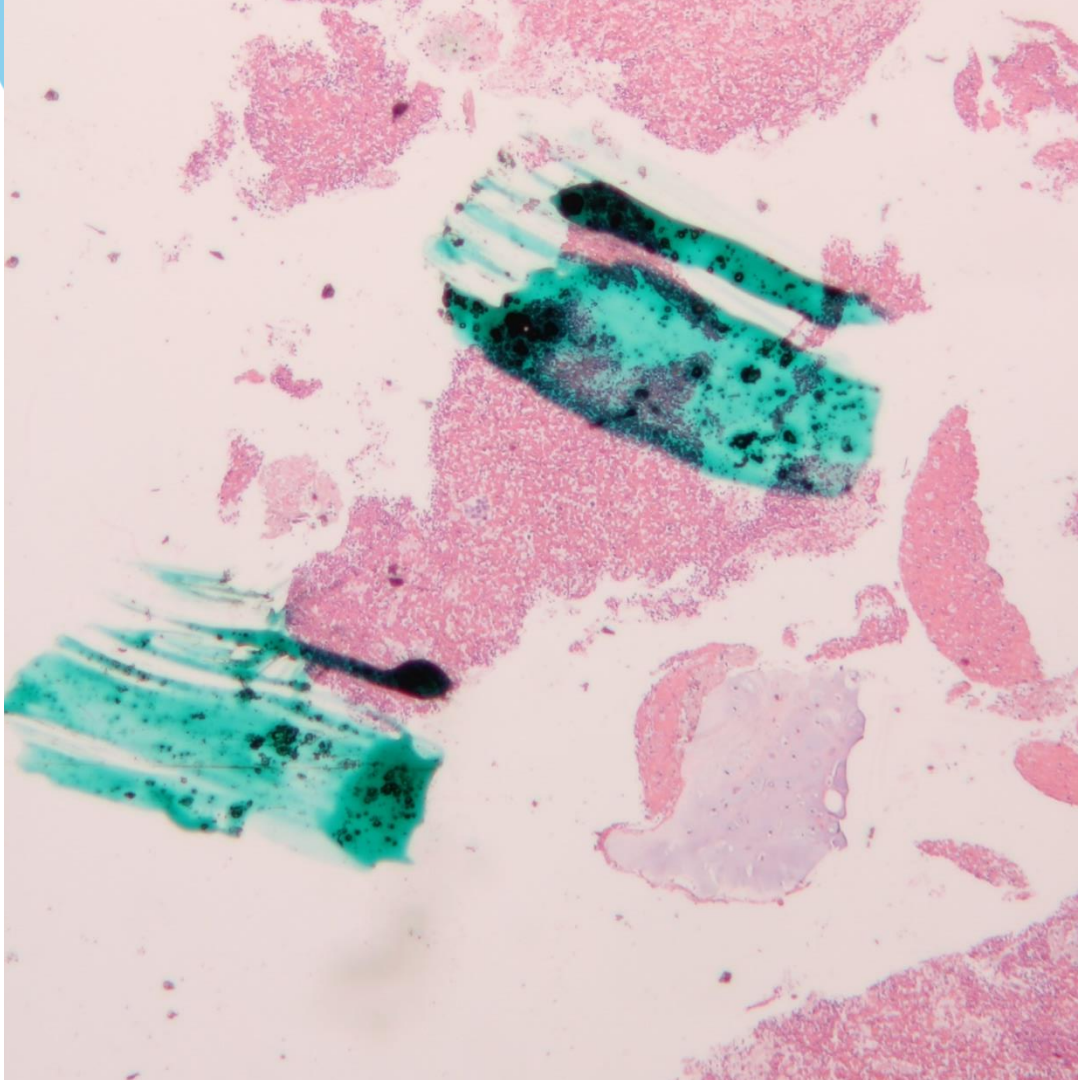
	19G	21G	22G
Sensitivity NSCLC	92,9% (85-97%)	89,4 % (79-94%)	82,1 % (66-91%)

MENTIMETER

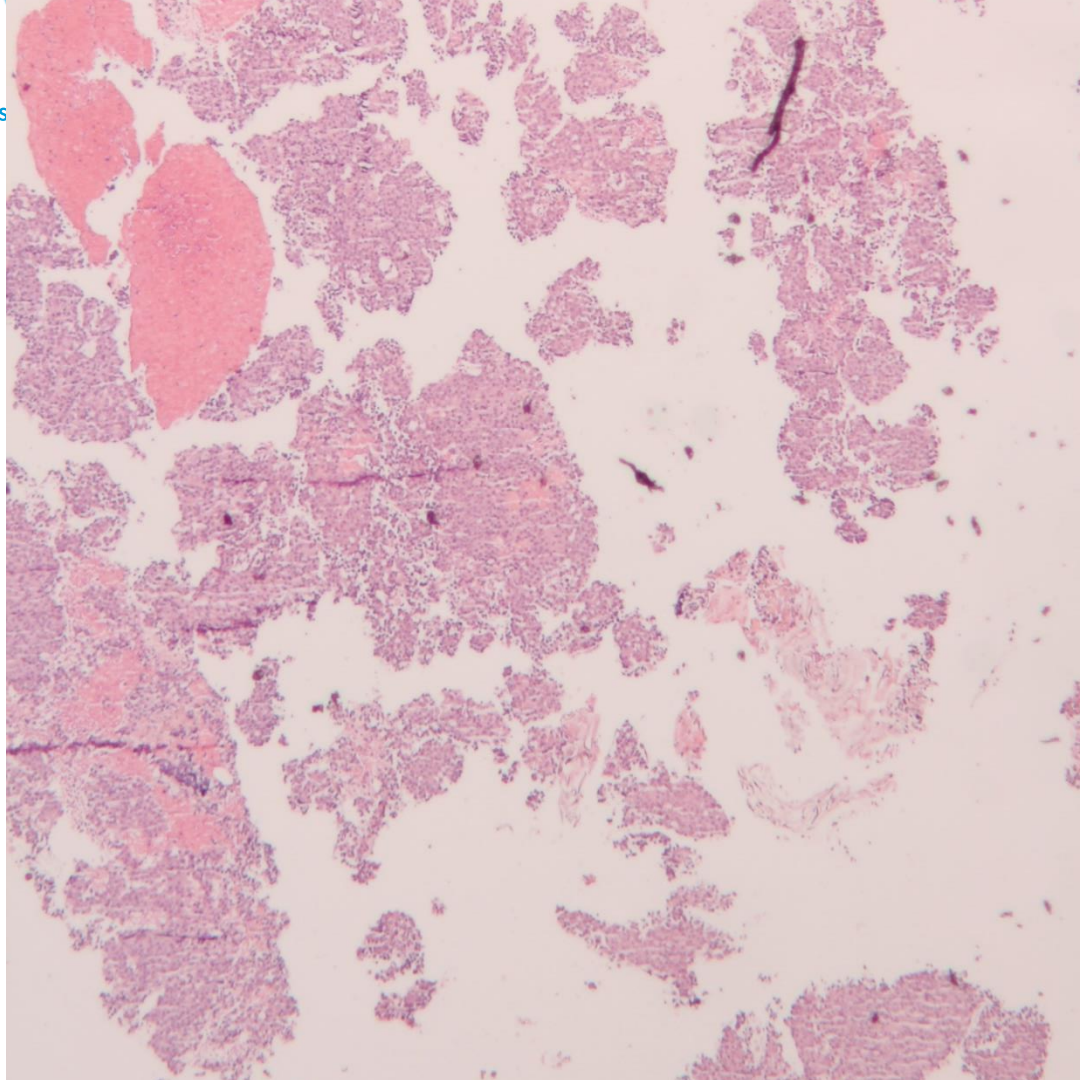
Welke naald gebruiken jullie longartsen

1. Ik weet niet
2. 19G
3. 21G
4. 22G
5. 25G

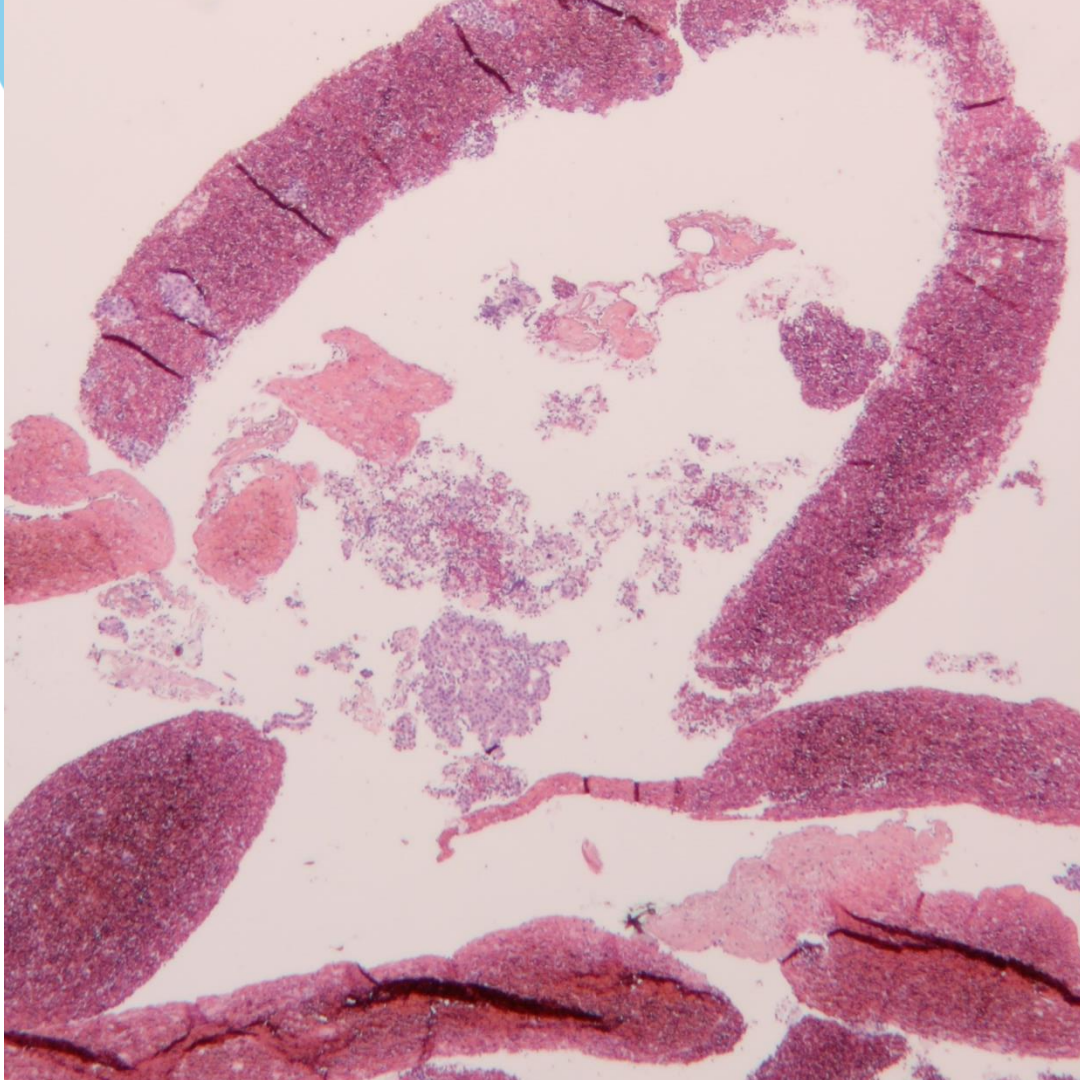
A



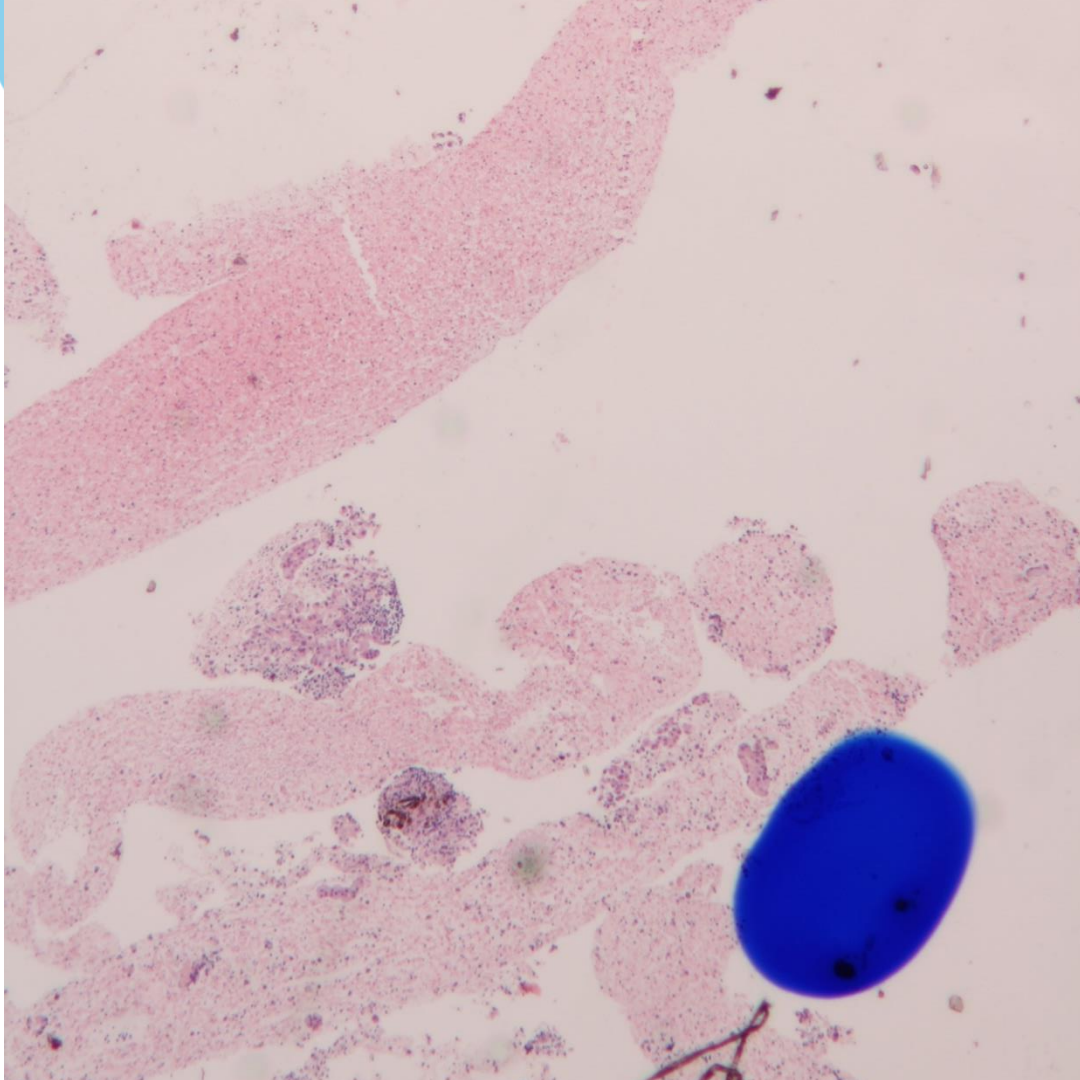
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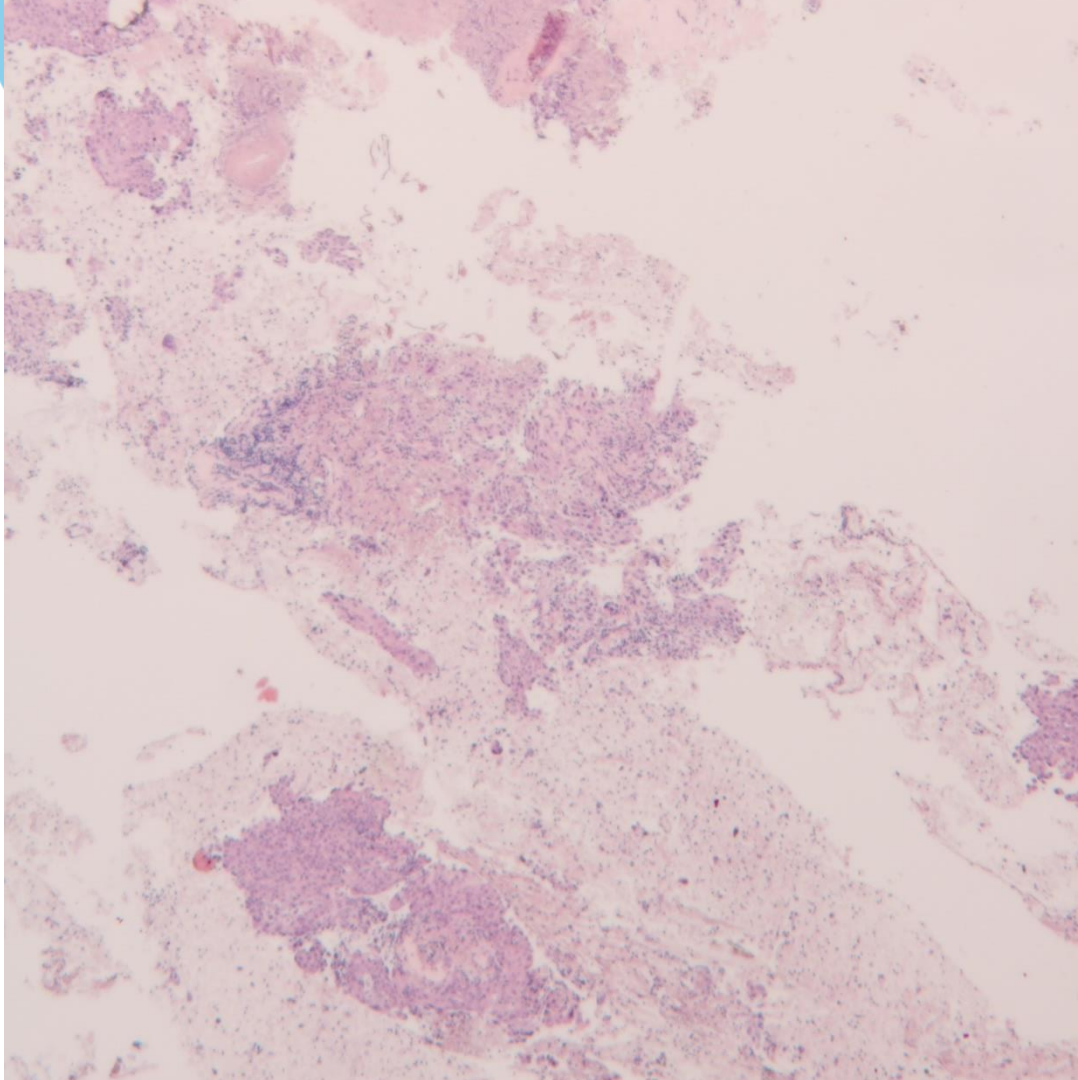
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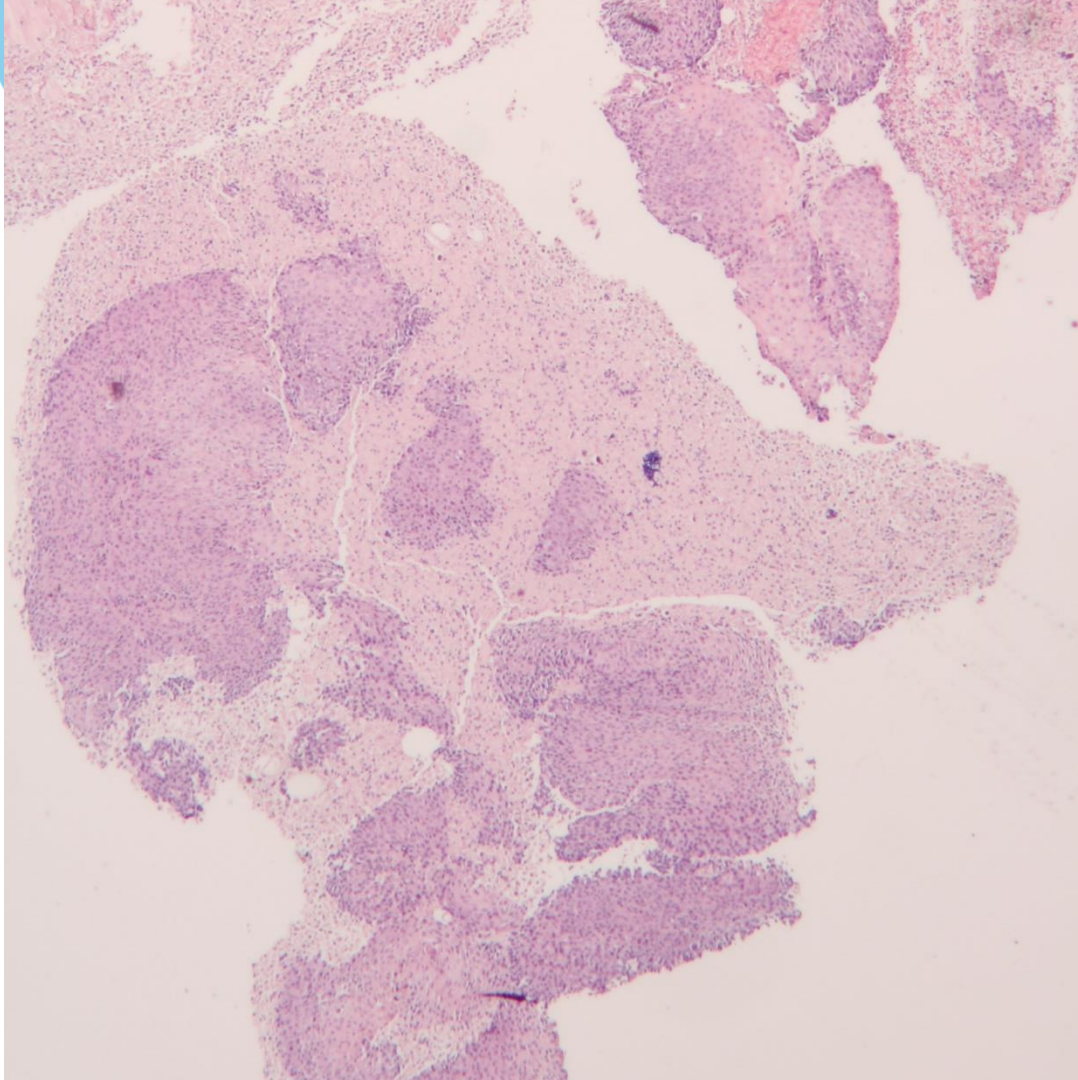
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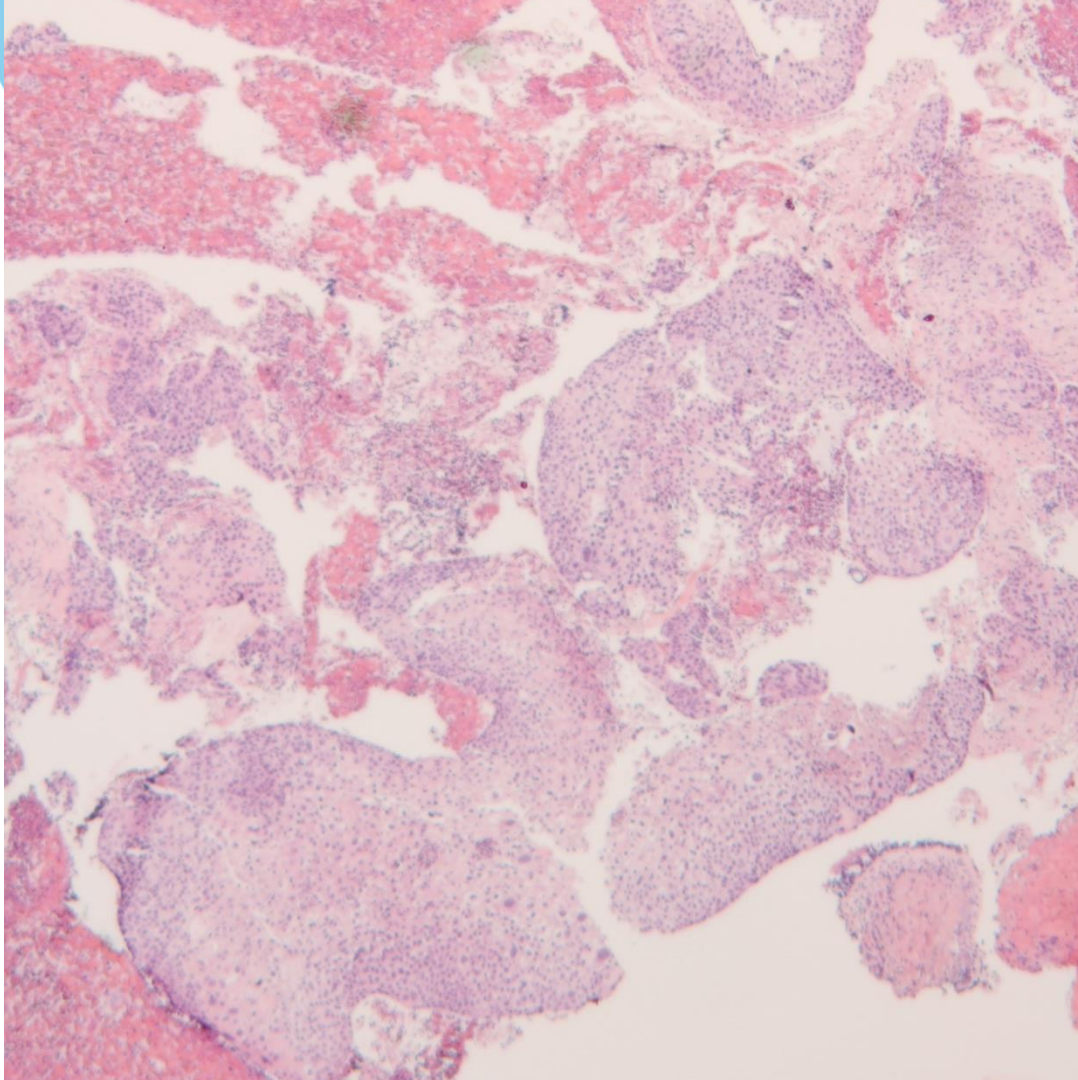
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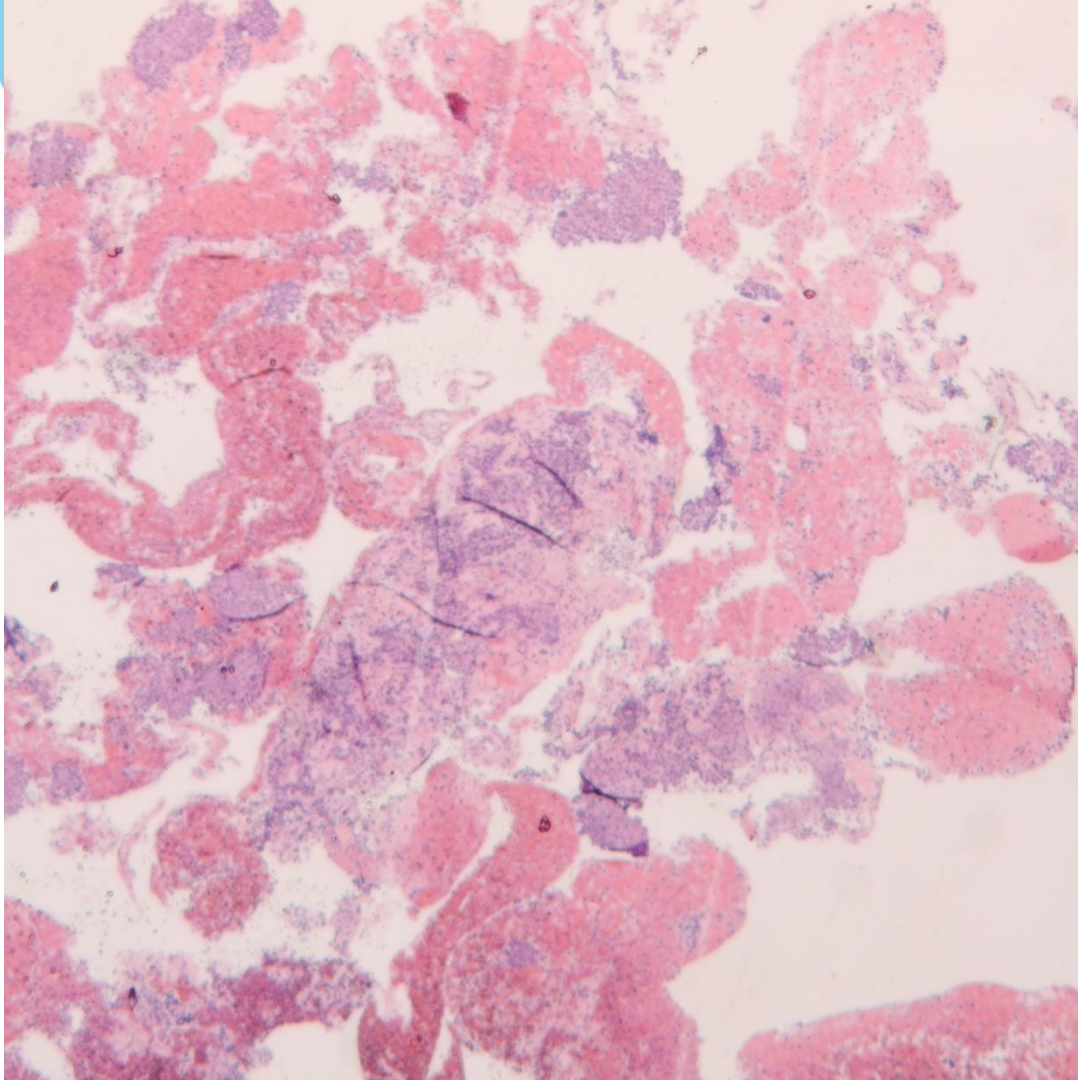
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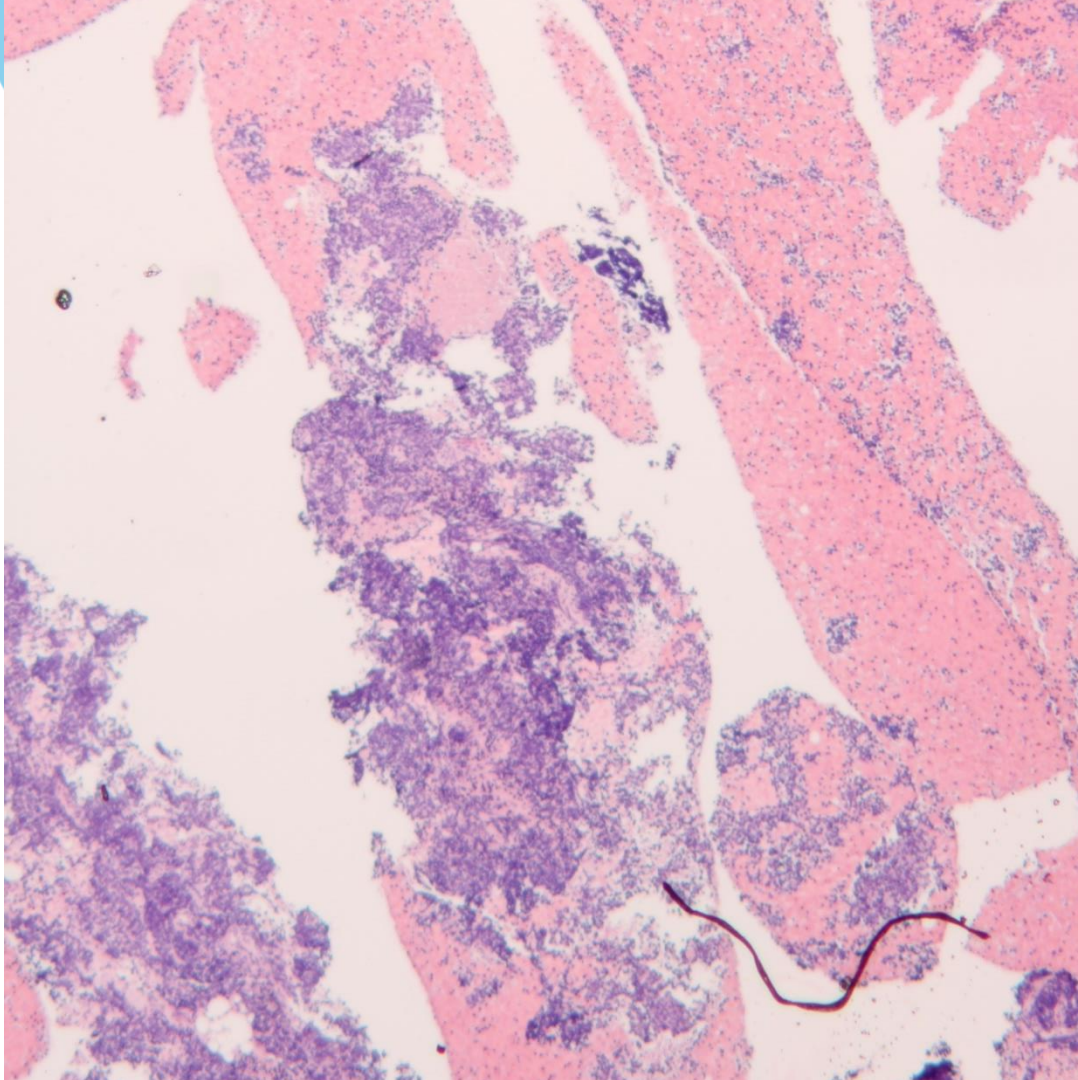
B



B



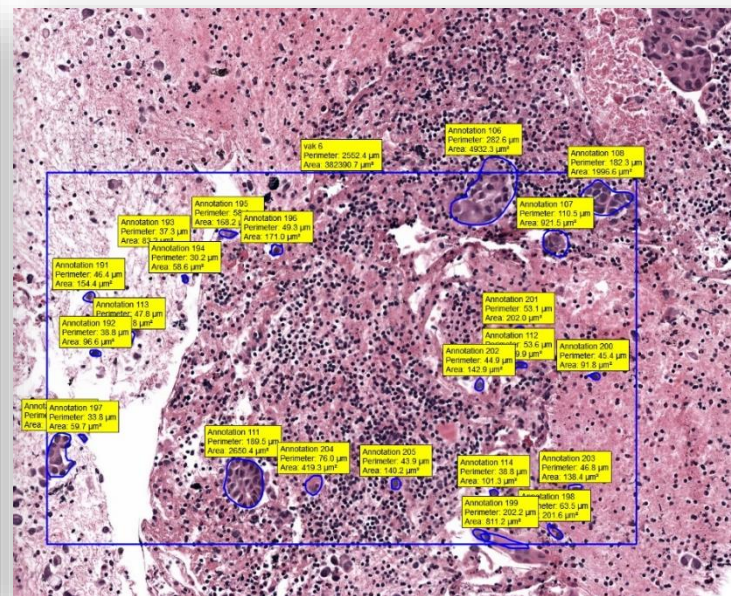
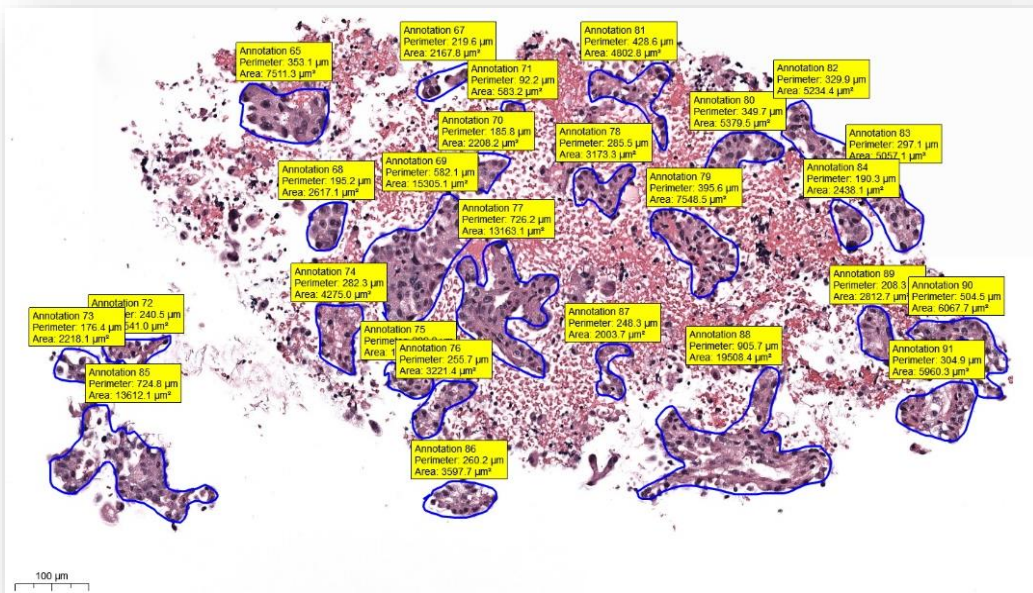
B



Situatie D

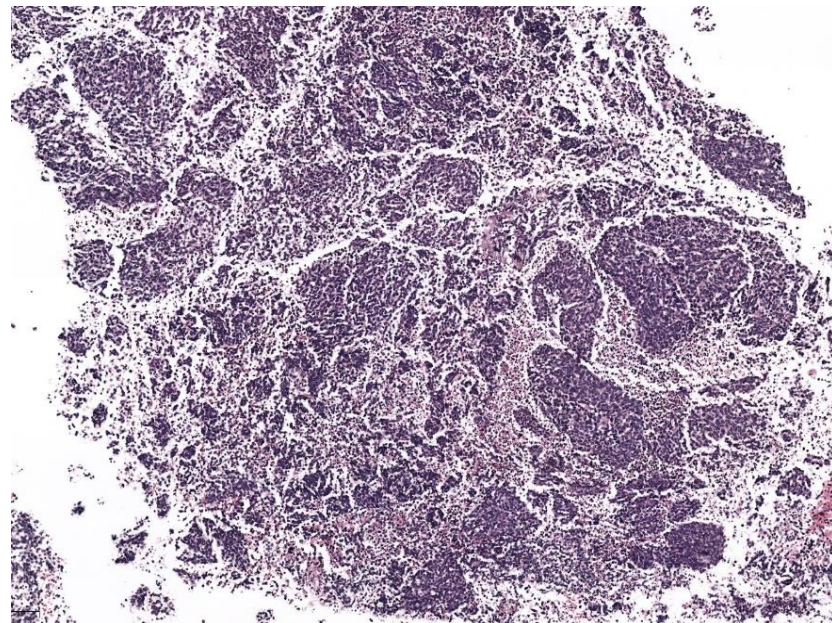
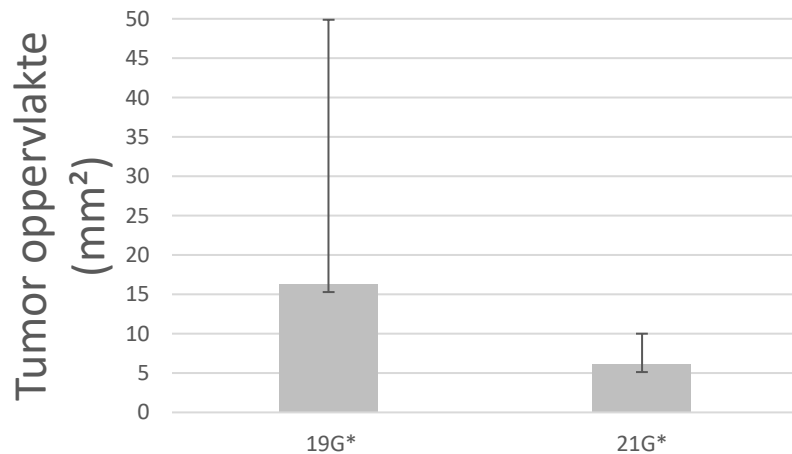
Materiaal komt alleen op formaline binnen, geen cytologie meer.
19 G naald lijkt belovend, wat als andere artsen het ook gaan gebruiken?

19G Vs. 21G Prospectief



Resultaten 19G Vs. 21G

Gemiddelde tumor oppervlakten
in de 19G en 21G groep



Enquete variatie in NL

Question	Subject	Answers	Quantity
1	Needle size	19 gauge 21 gauge 22 gauge 25 gauge	2 4 4 1
2	Rapid on site evaluation (ROSE)	Yes Sometimes No	6 1 2
3	Number of passes	Does not apply (ROSE) 3 passes 4 passes	5 2 2

Situatie E

Materiaal komt alleen op formaline binnen, geen cytologie meer.

Alle longartsen gebruiken 21G

Cytologische analisten kijken EBUS histologie, uitslag via PALGA protocol module.

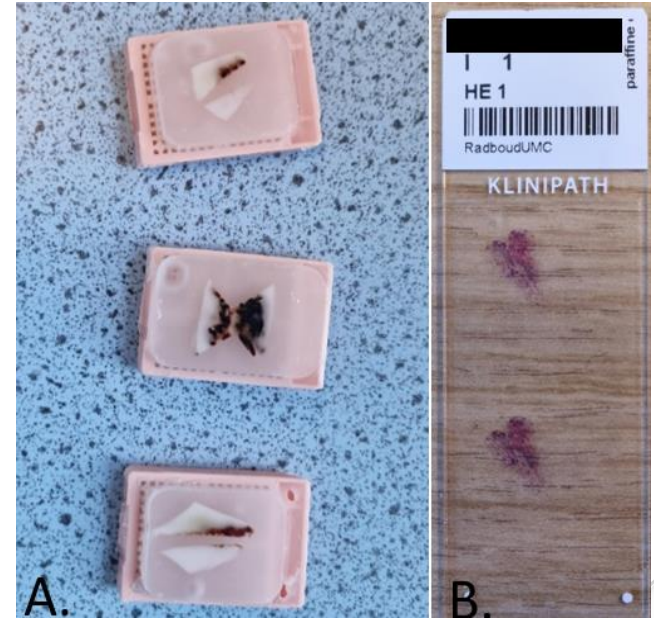
Supervisie door patholoog.

Tissue Management

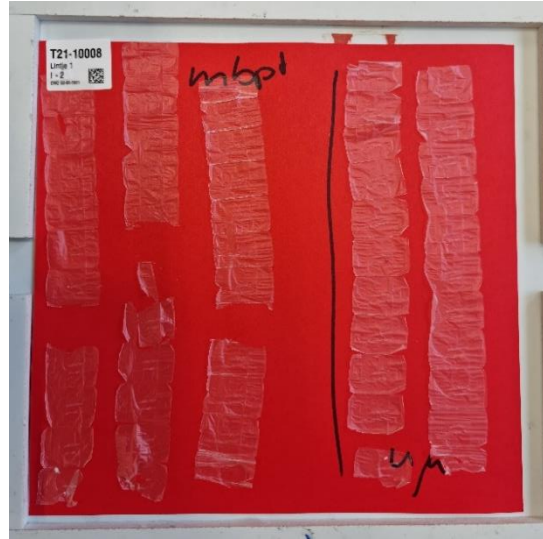


Resultaten tissue management

- **Materiaal schoon gesneden**
 - 3x wel
 - **4x niet**
 - 2x alleen bij aanvraag moleculaire testen
- **Bewaren materiaal**
 - 5x lintjes (5 dagen)
 - 4x blanco's (in archief)

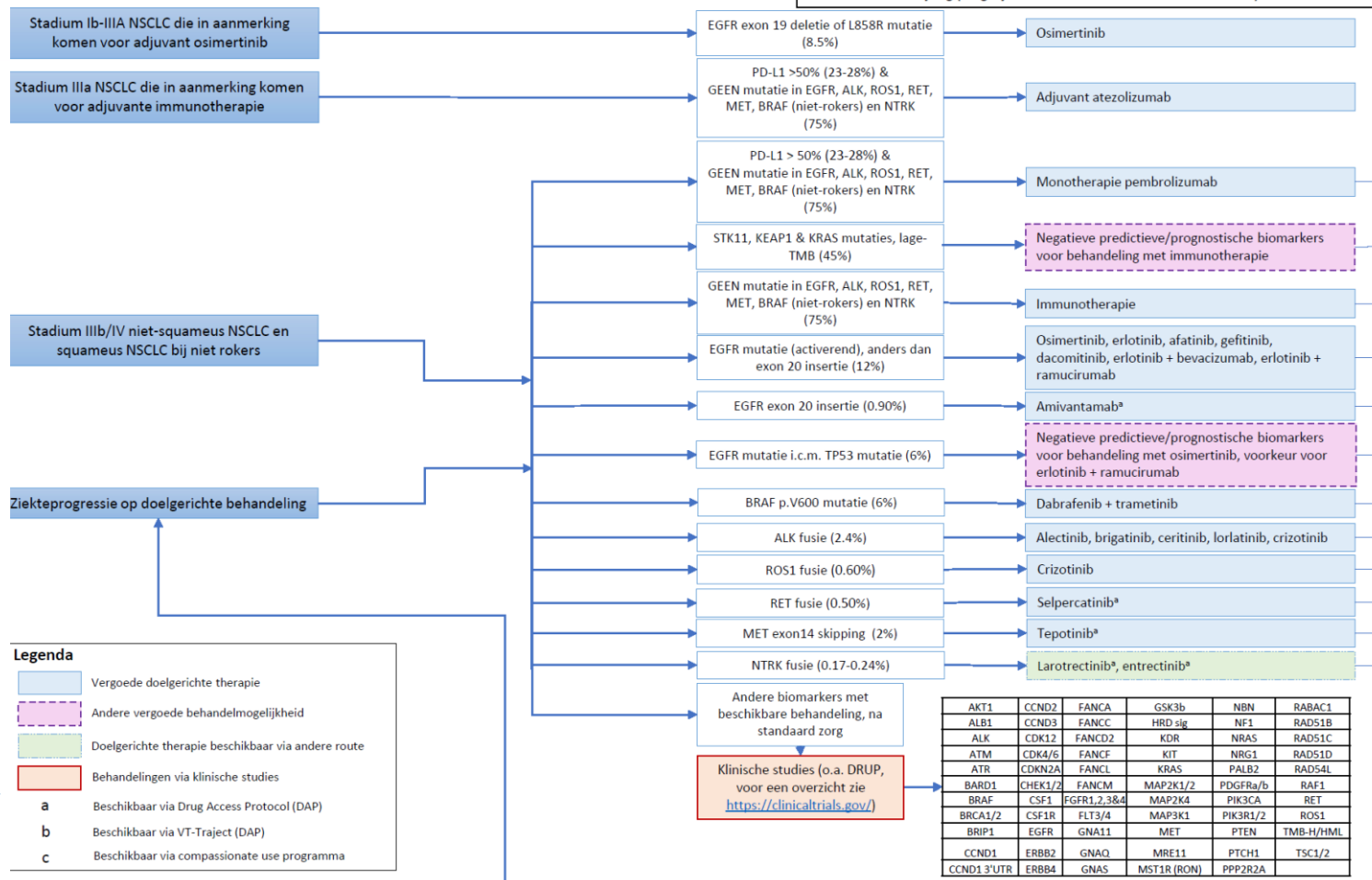


Tissue management - vroeger



Niet-kleincellig longcarcinoom (NSCLC)

Voor eventuele verwijzing naar klinische geneticus op basis van moleculaire analyse zie [Leidraad voor verwijzing na DNA-onderzoek in \(tumor\)weefsel | Arts en Genetica](#)
Advies voor verwijzing (mogelijk in combinatie met aanvullend criterium)



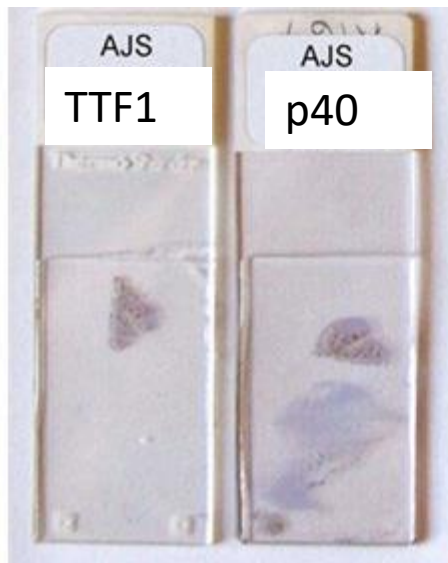
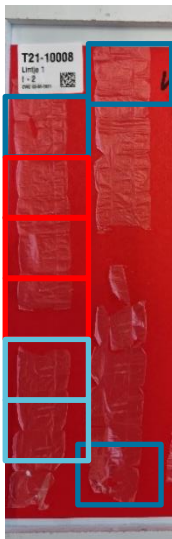
Tissue management - nu



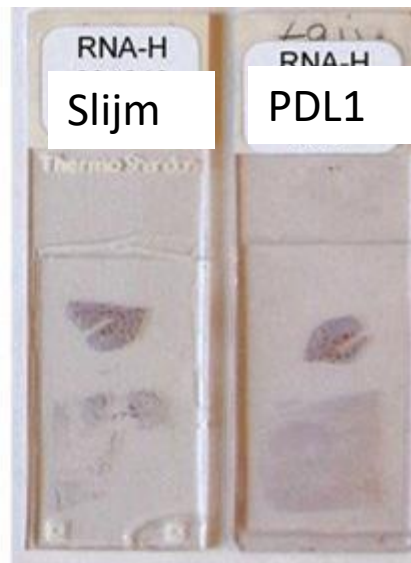
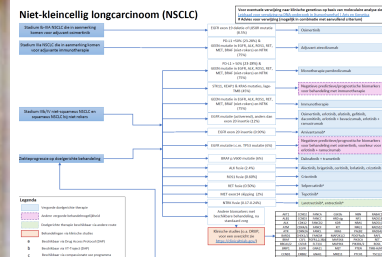
Tissue management



Non PCC

 $+/ -$

—

 $+/ -$ 

Wat is er veranderd

Geen pre-analytische variabele ethanol

Predictieve IHC mogelijk

Geen cytologie

Kosten efficiëntie in de zorg

Uniformering longartsen

Minder variatie in opbrengst

FFPE materiaal

Toepasbaar op alle predictieve testen van IHC tot aan RNA

Tissue management

Meer materiaal voor predictieve testen

