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Case 18

39 year old Chinese female presented with a left breast lump.

US showed a 2.7x2.5x0.9cm elongated circumscribed solid ovoid lobulated nodule at the 2 o'clock position, 8cm from the nipple.

It was noted to have increased in size by more than 20% since 2014.

Radiologically benign appearance.

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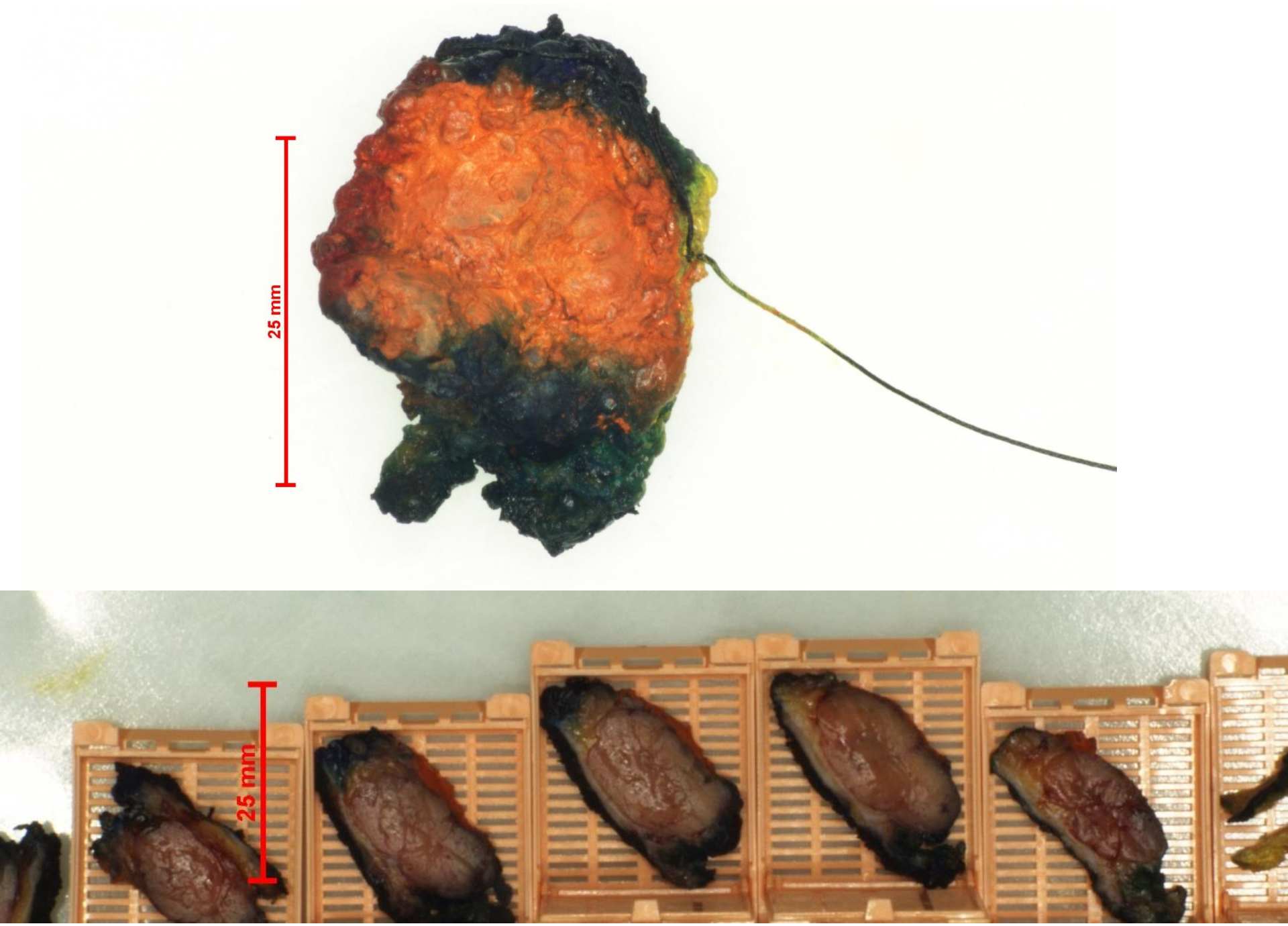
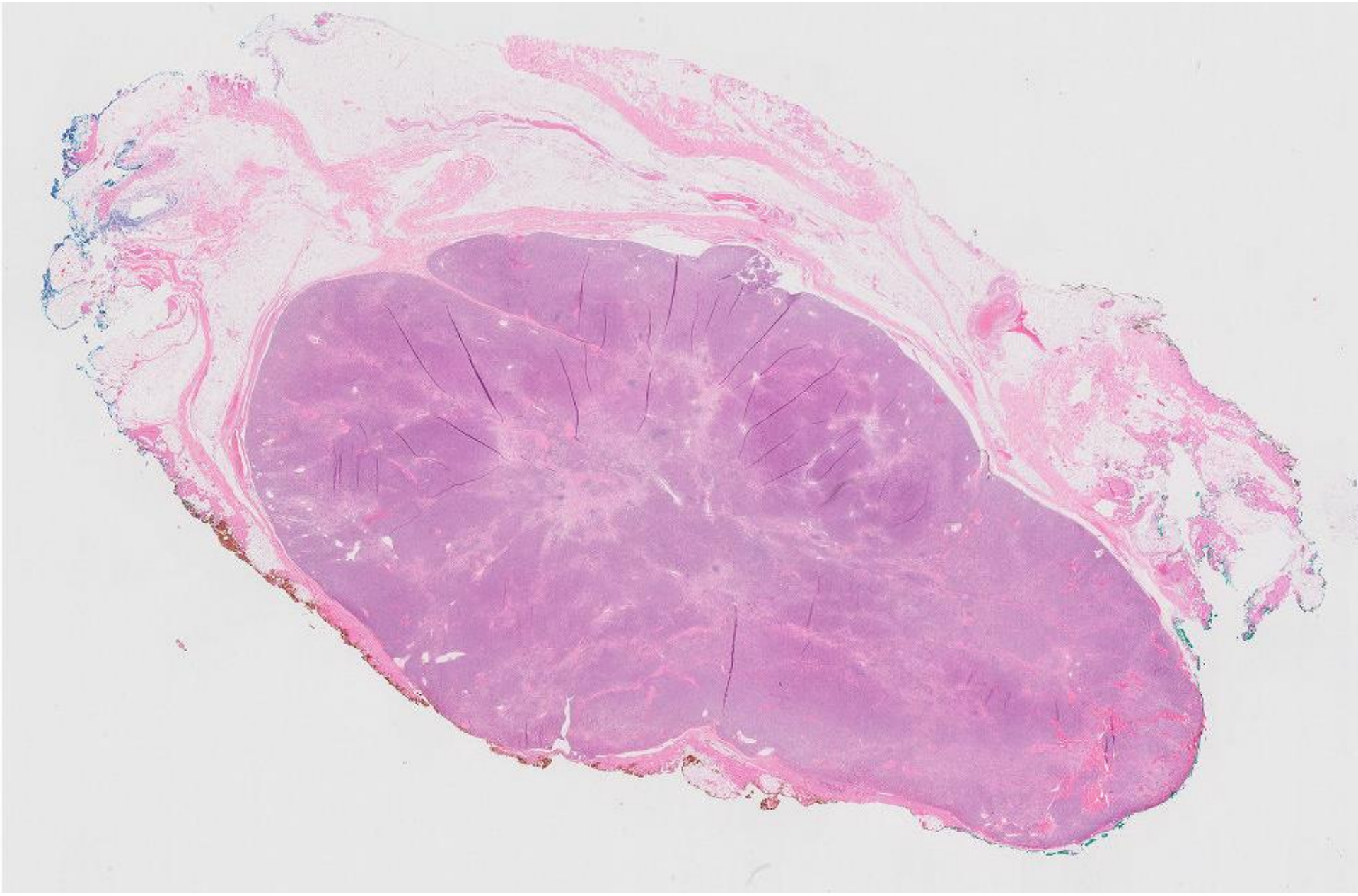
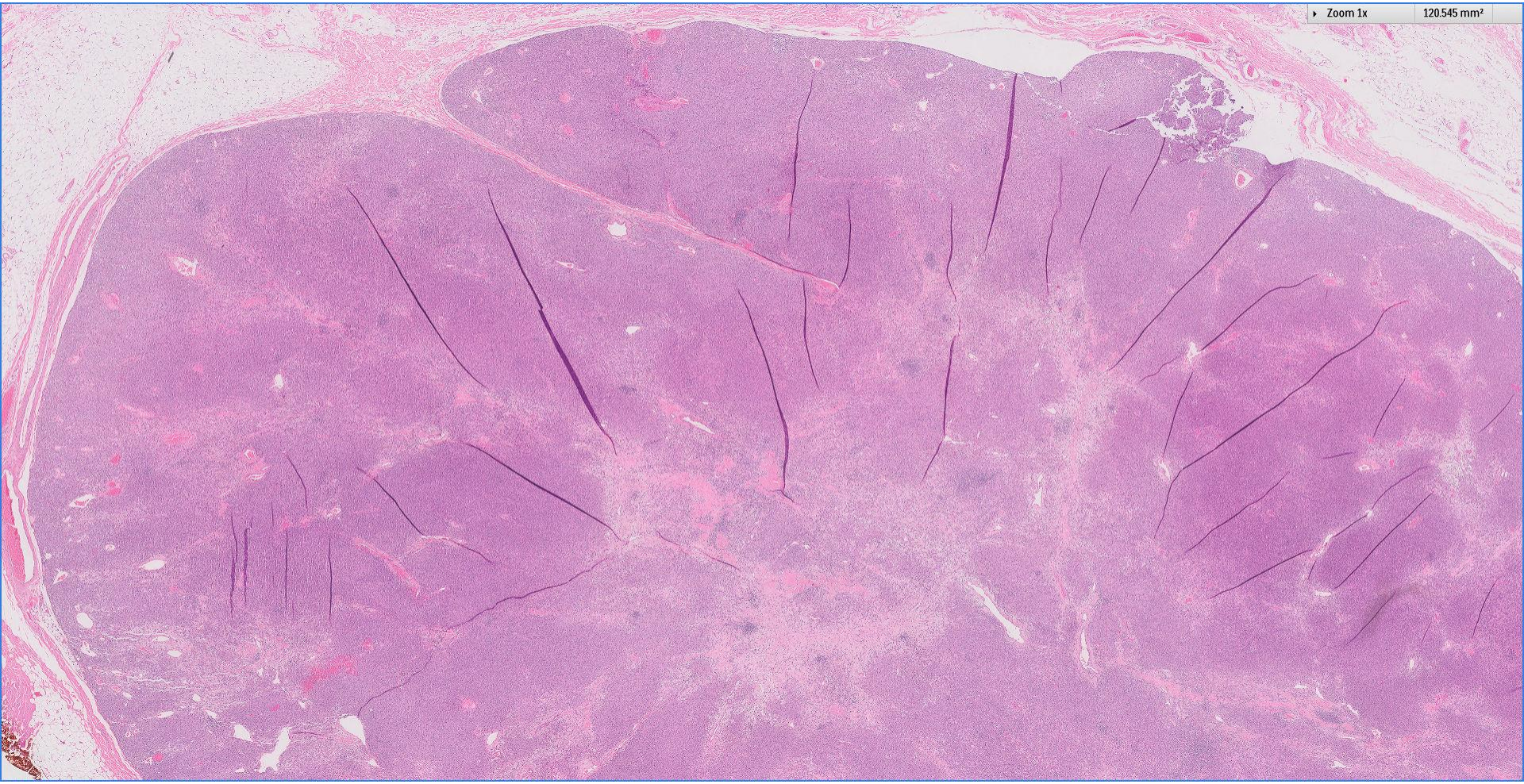
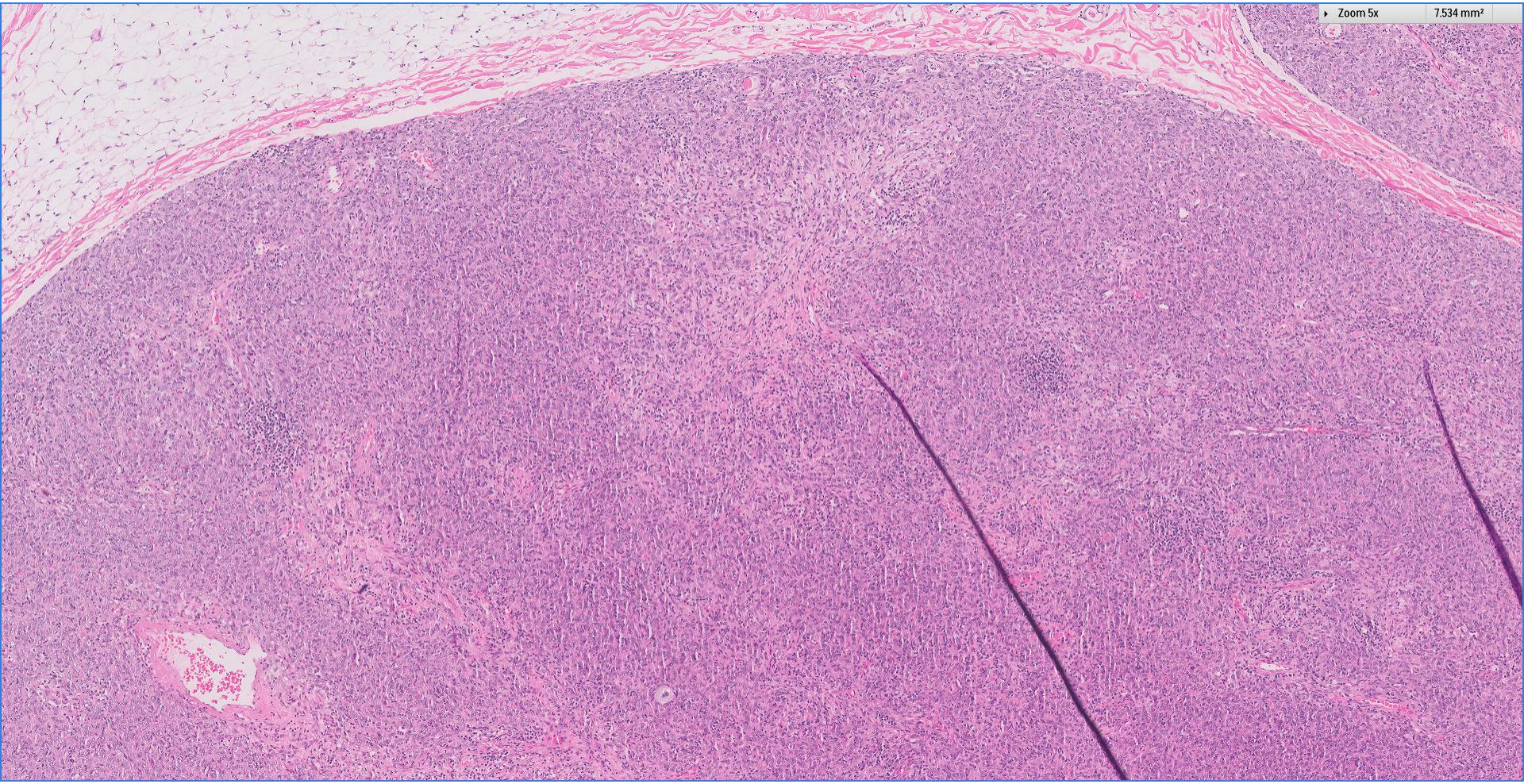
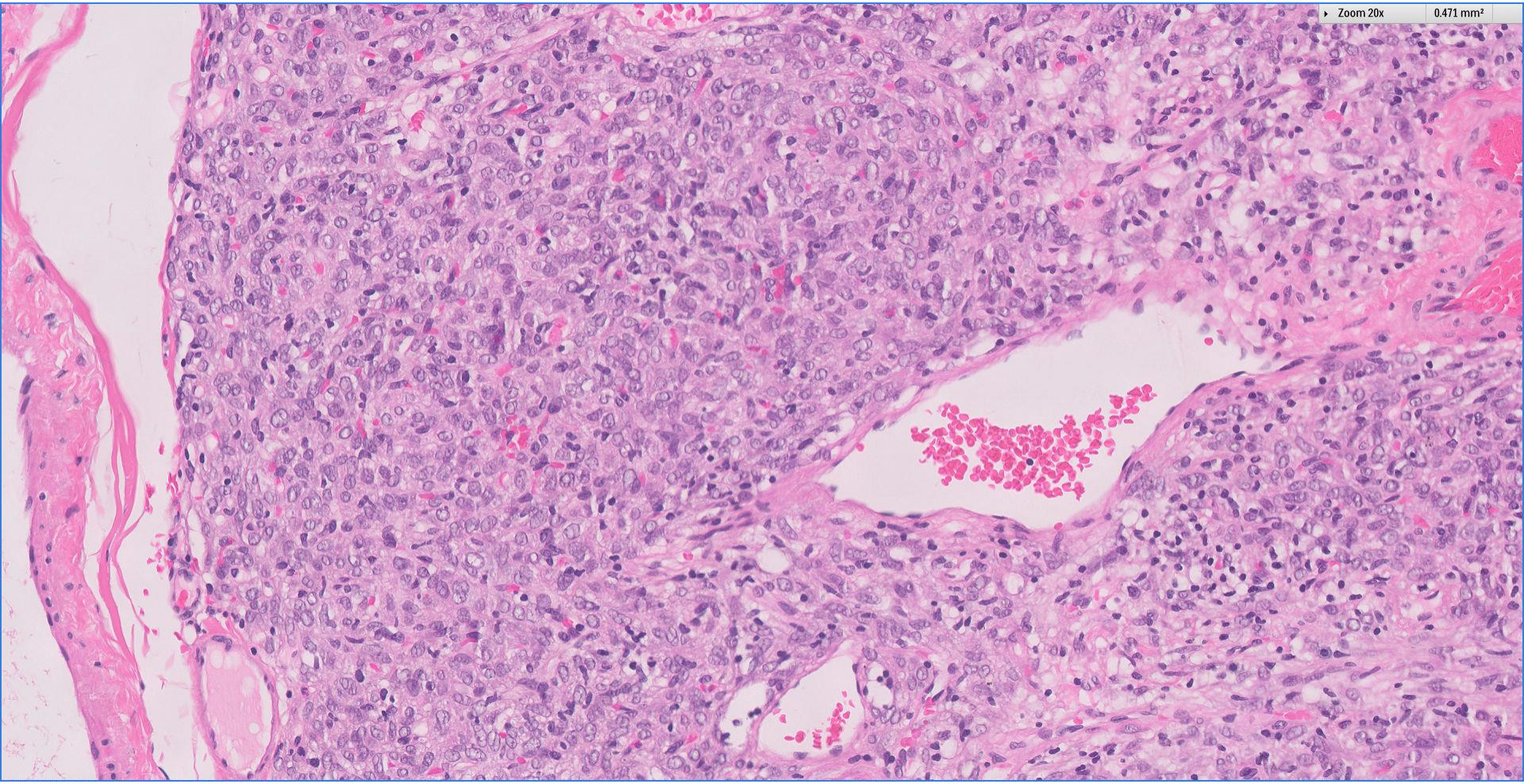
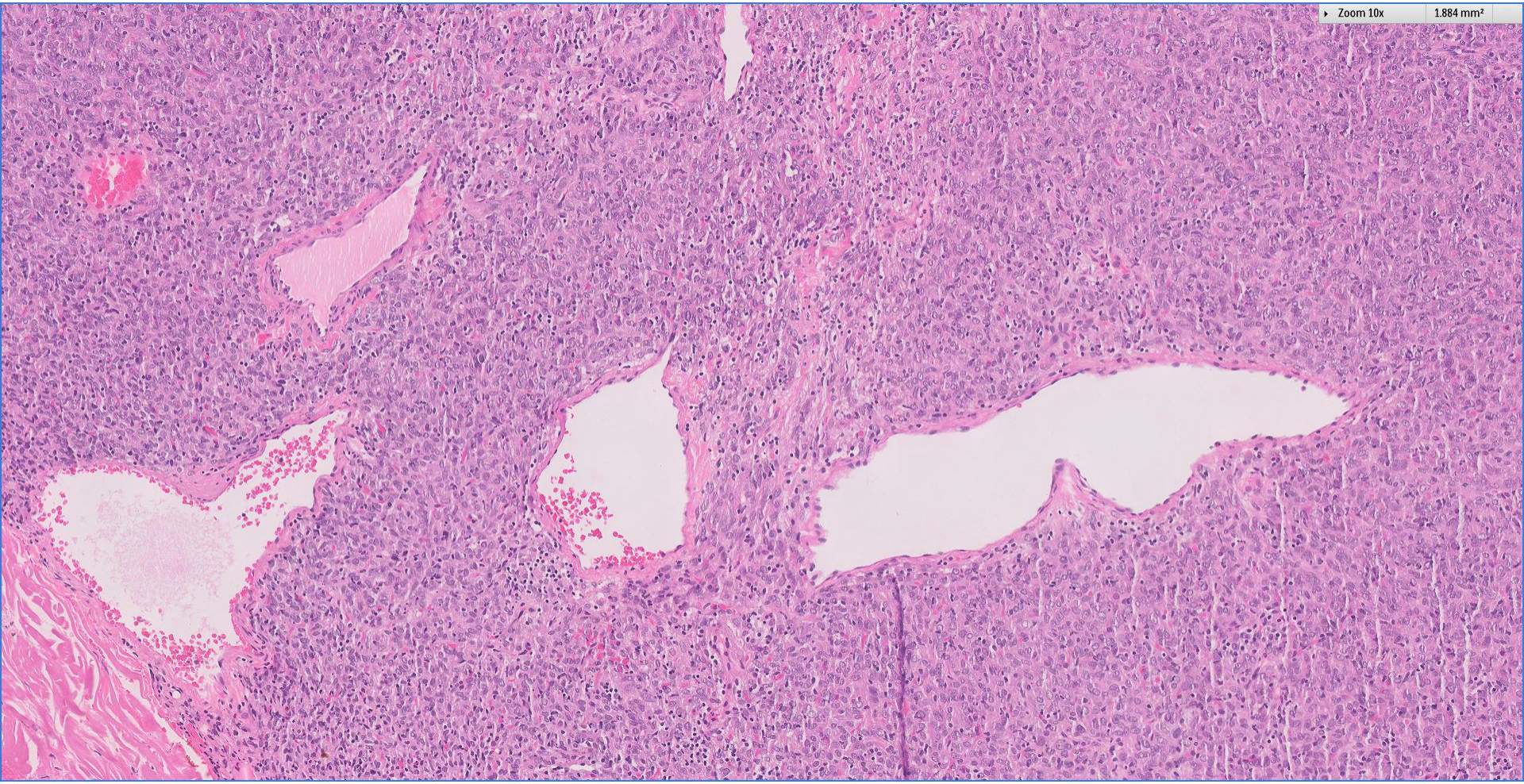

25 mm
25 mm

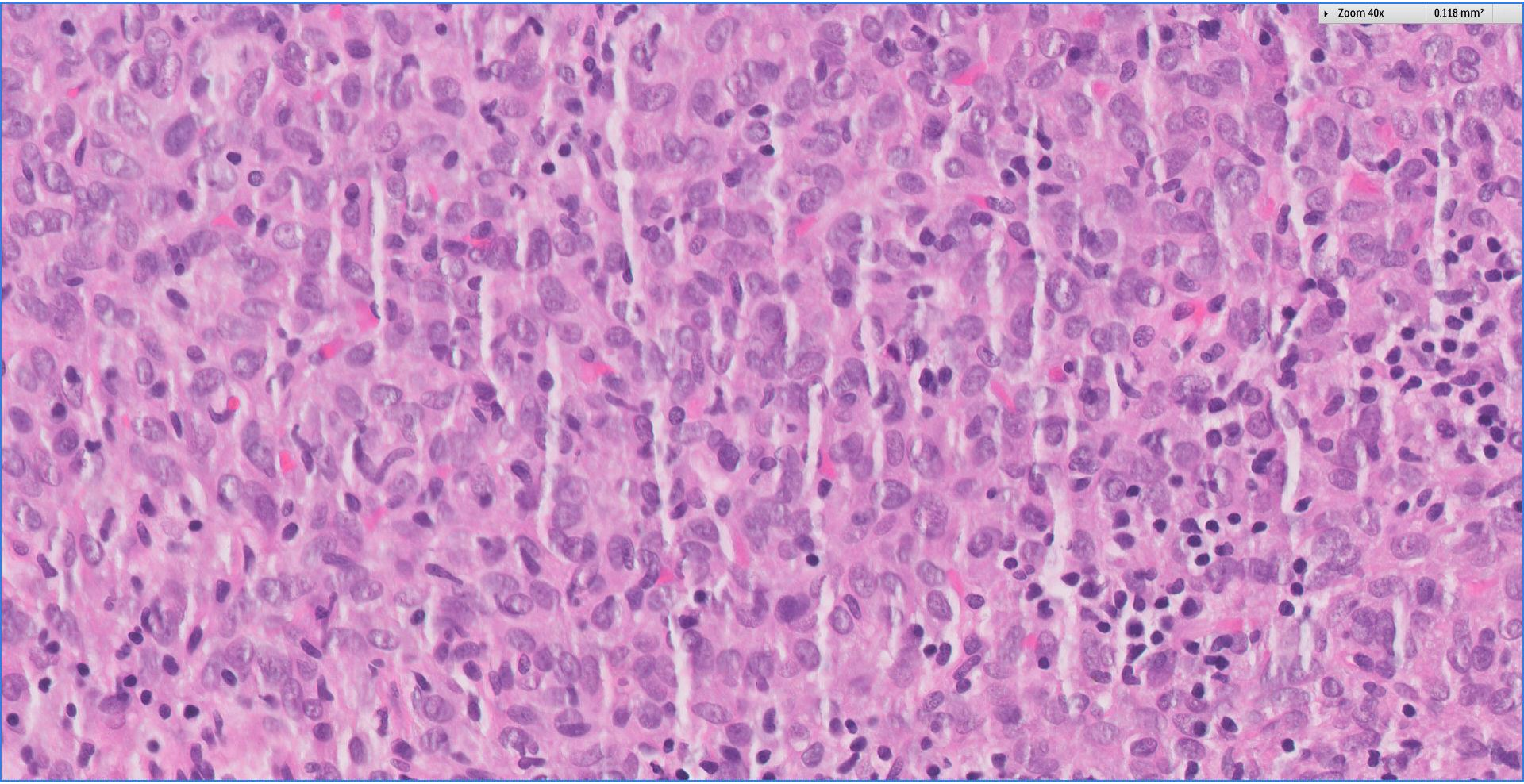


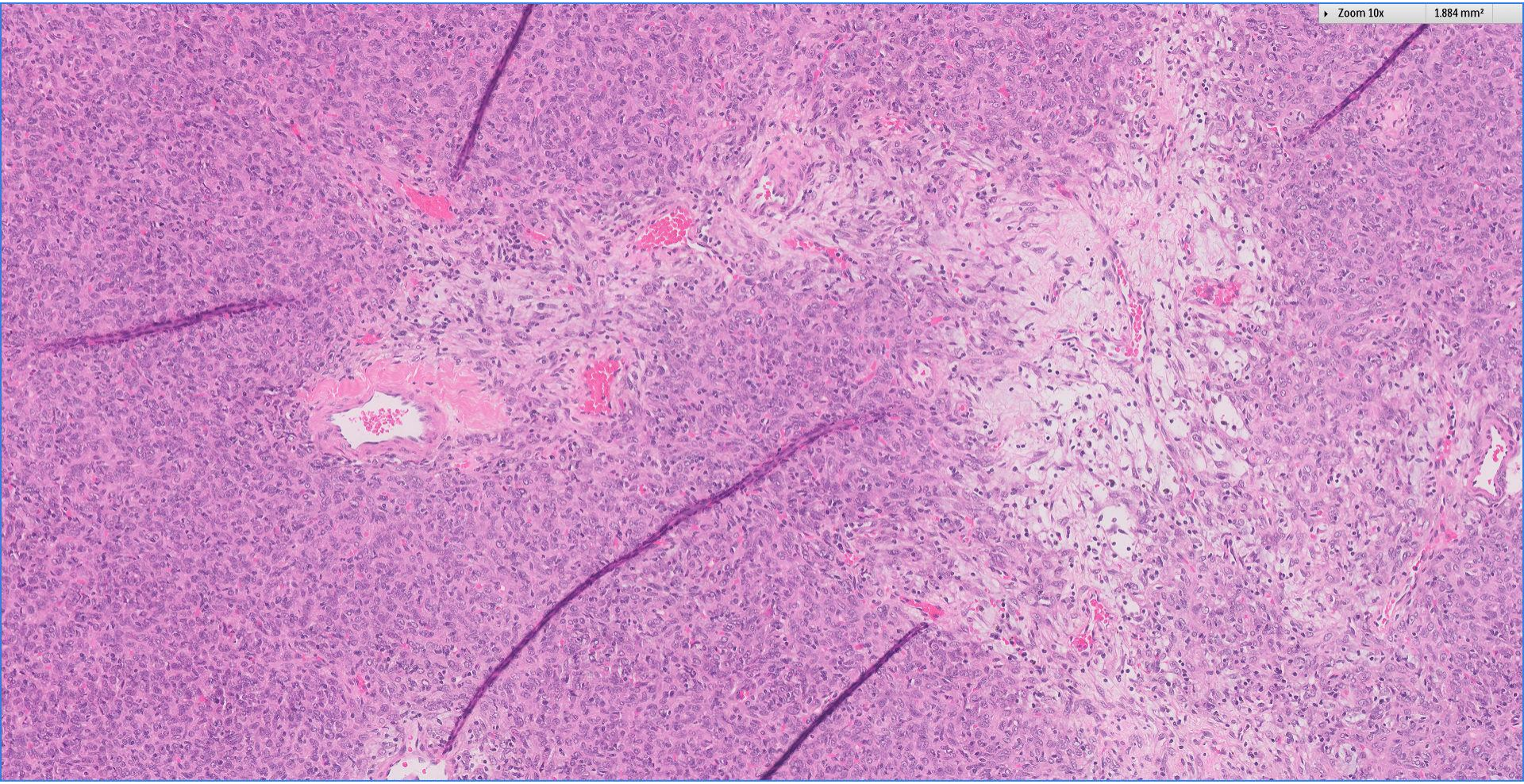

Zoom 1x
120.545 mm²

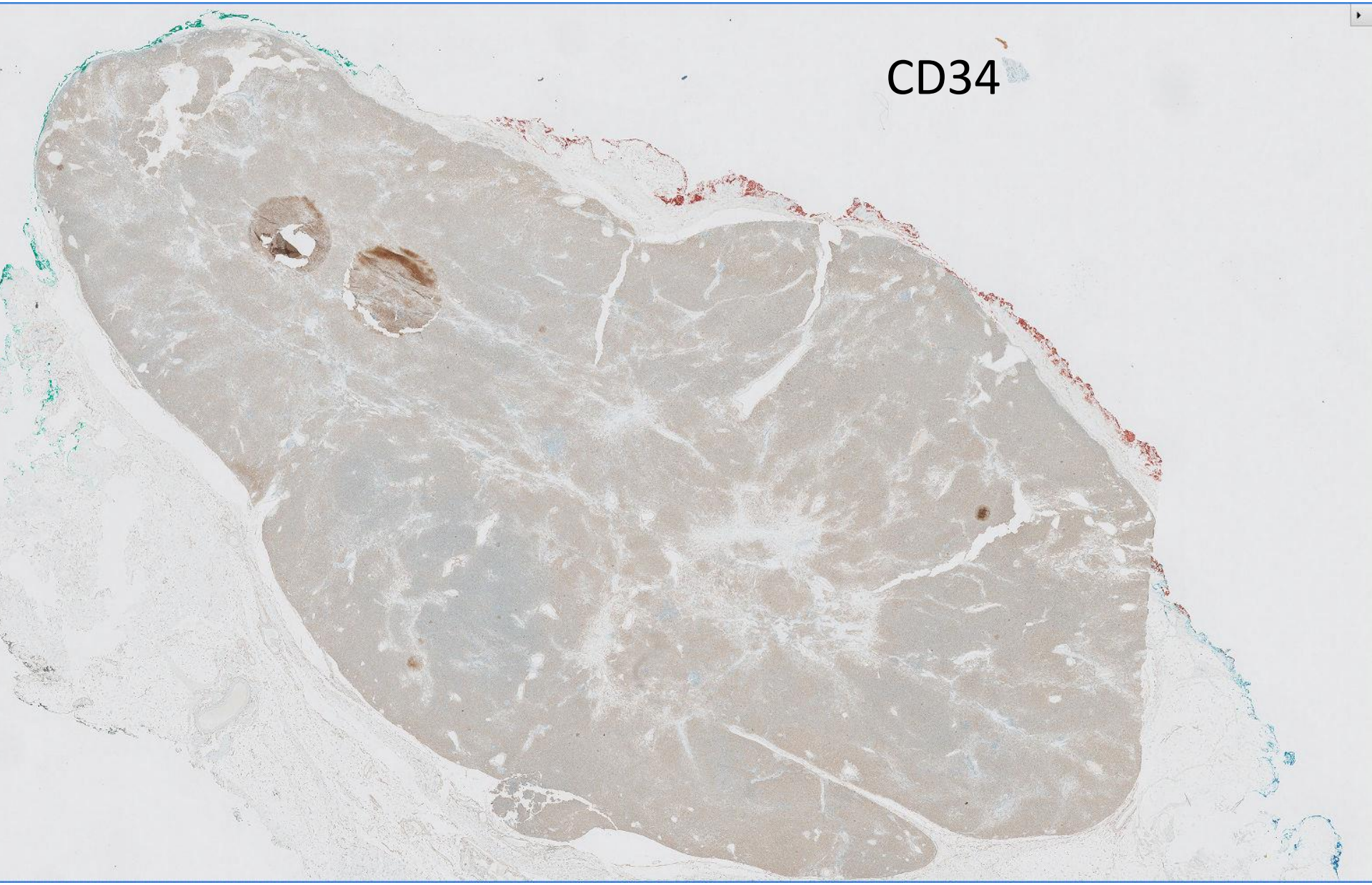

Zoom 5x
7.534 mm²


Zoom 20x
0.471 mm²

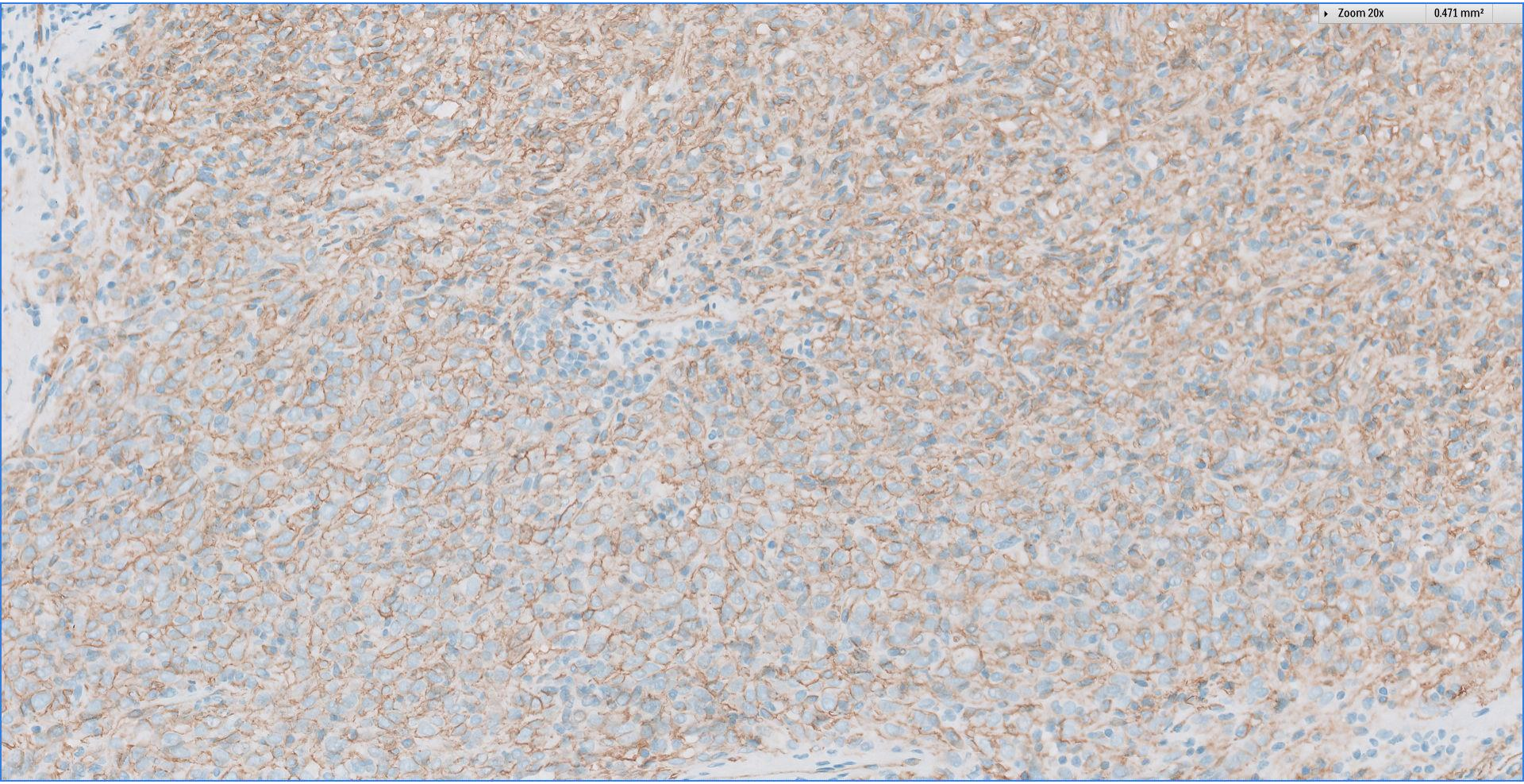

Zoom 10x
1.884 mm²


Zoom 40x
0.118 mm²

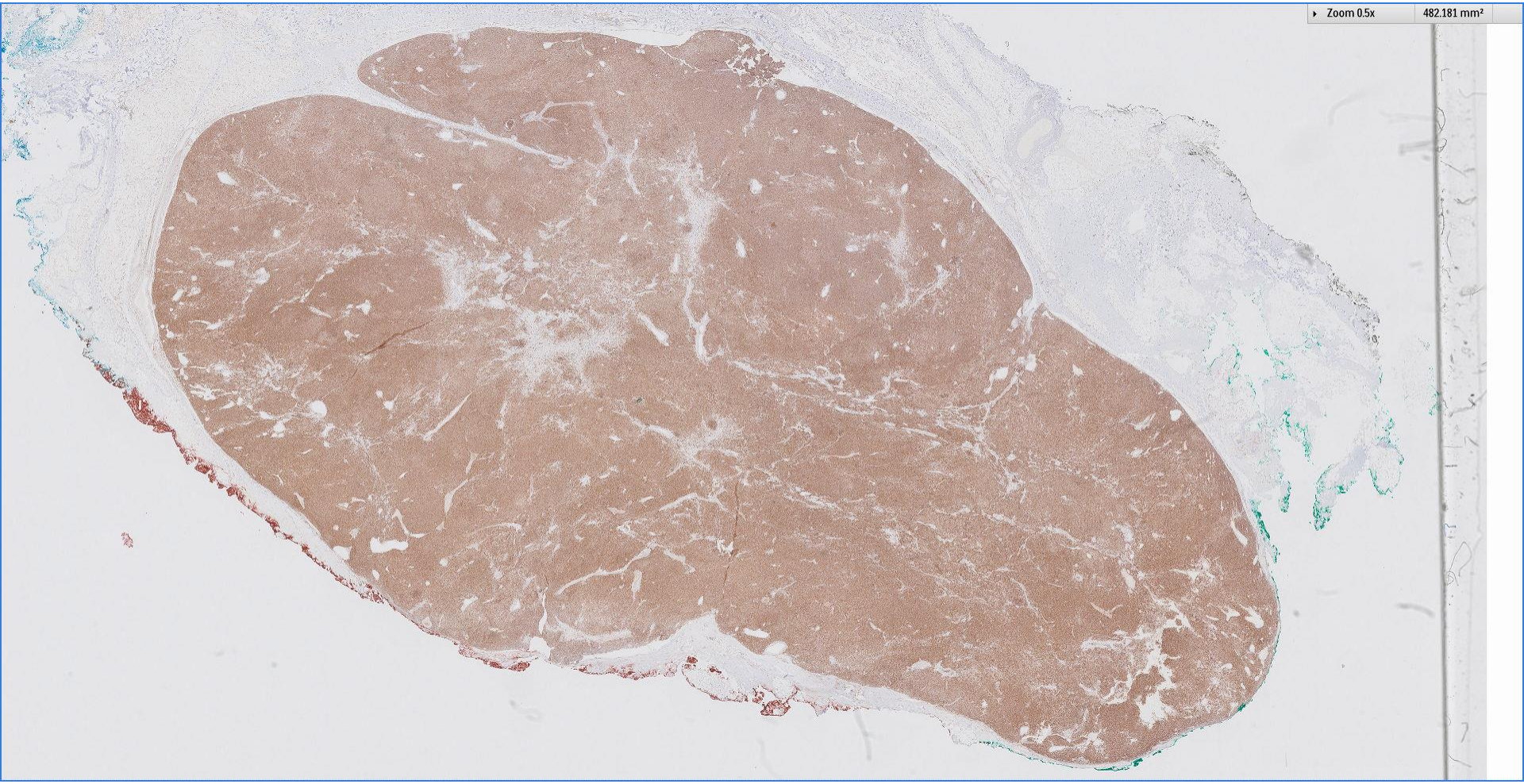

Zoom 10x
1.884 mm²


CD34

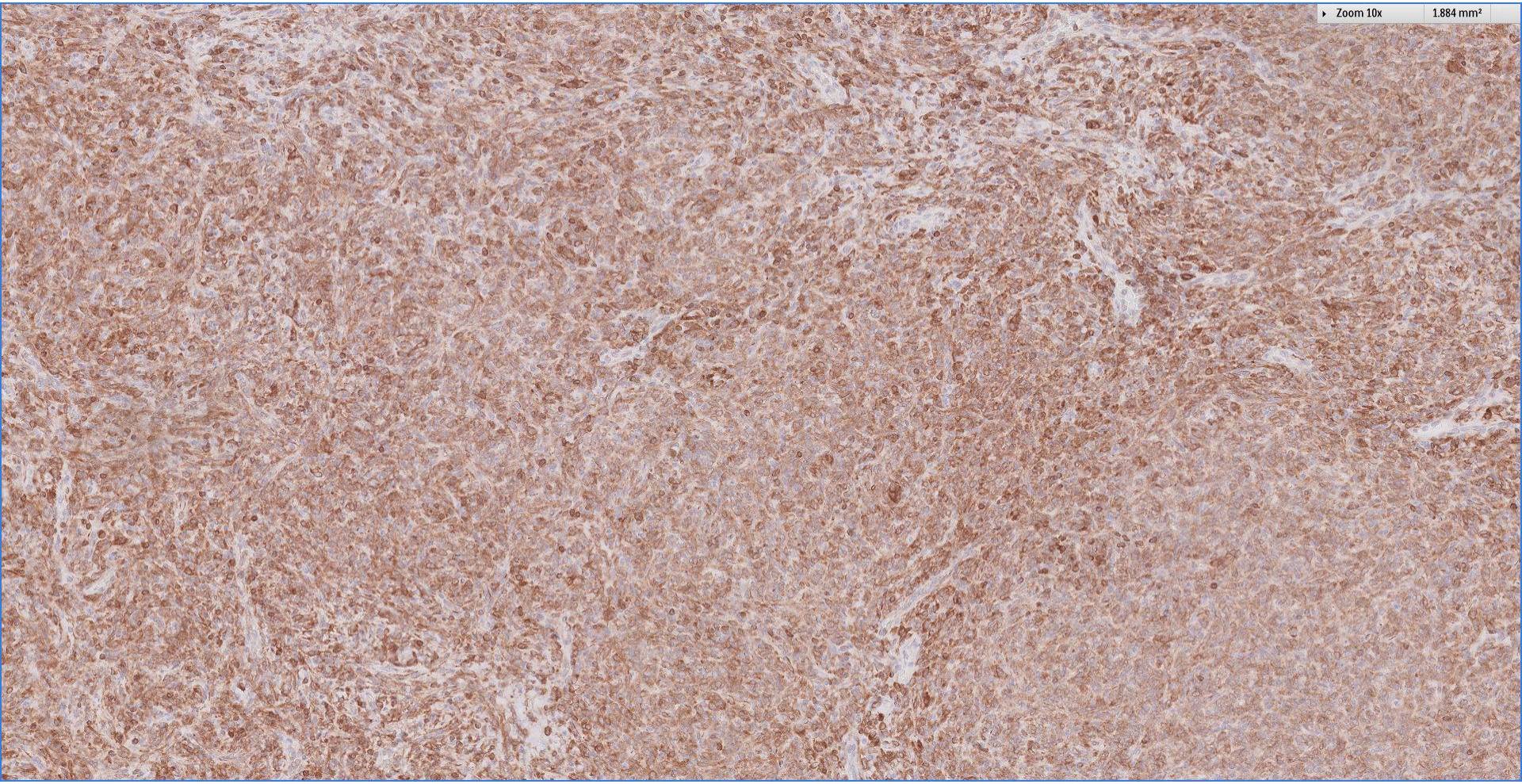
CD34



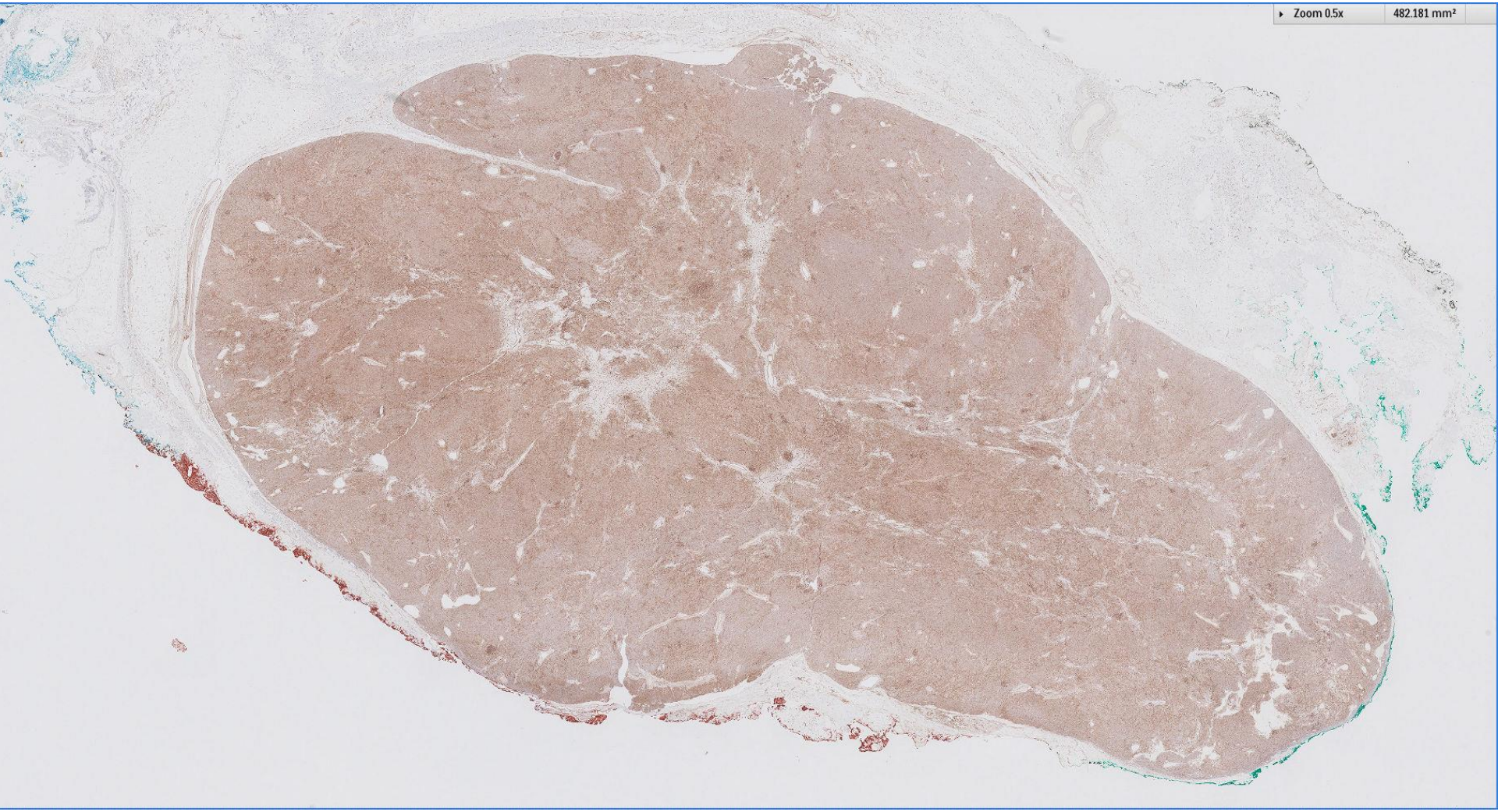
bcl2



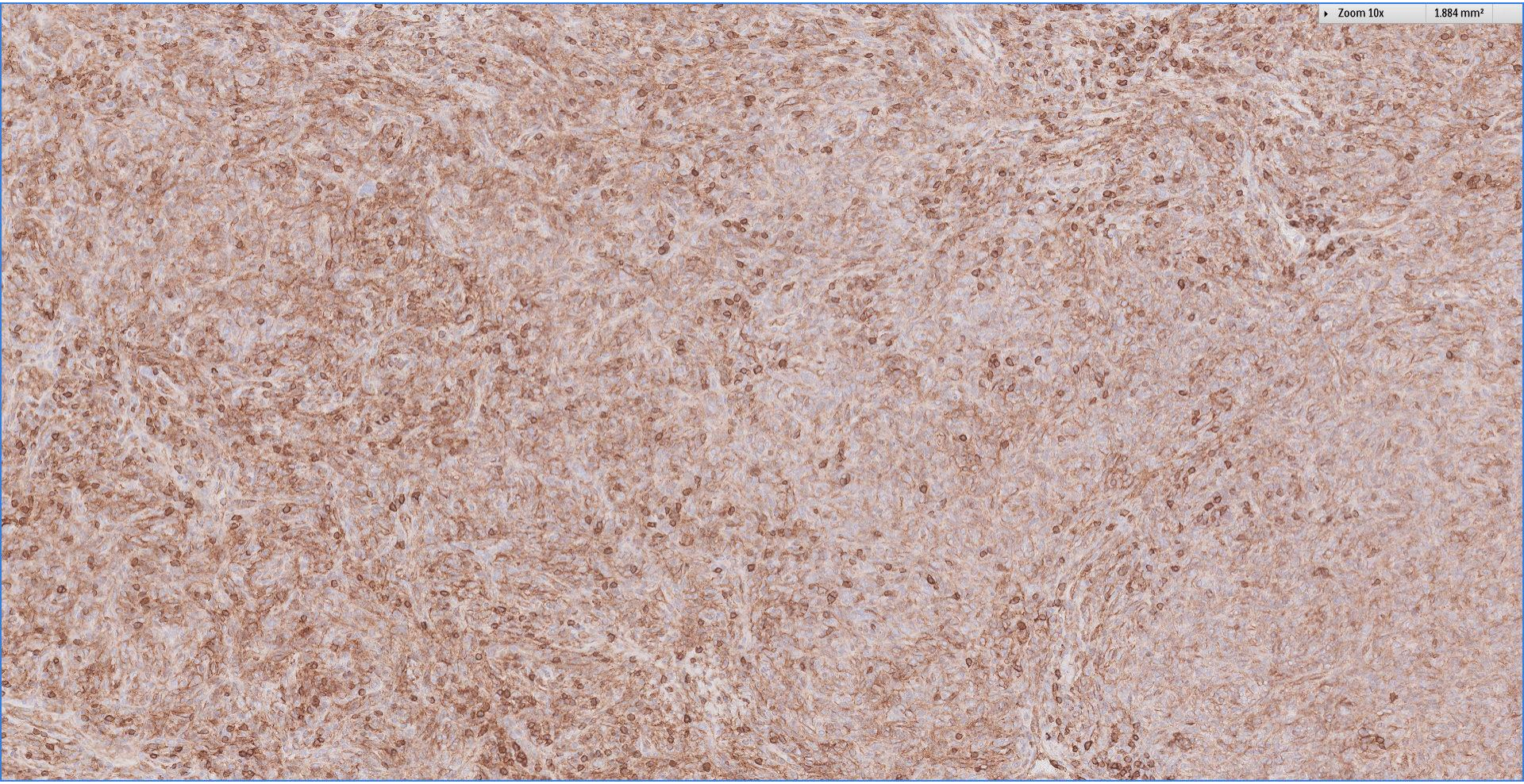
bcl2



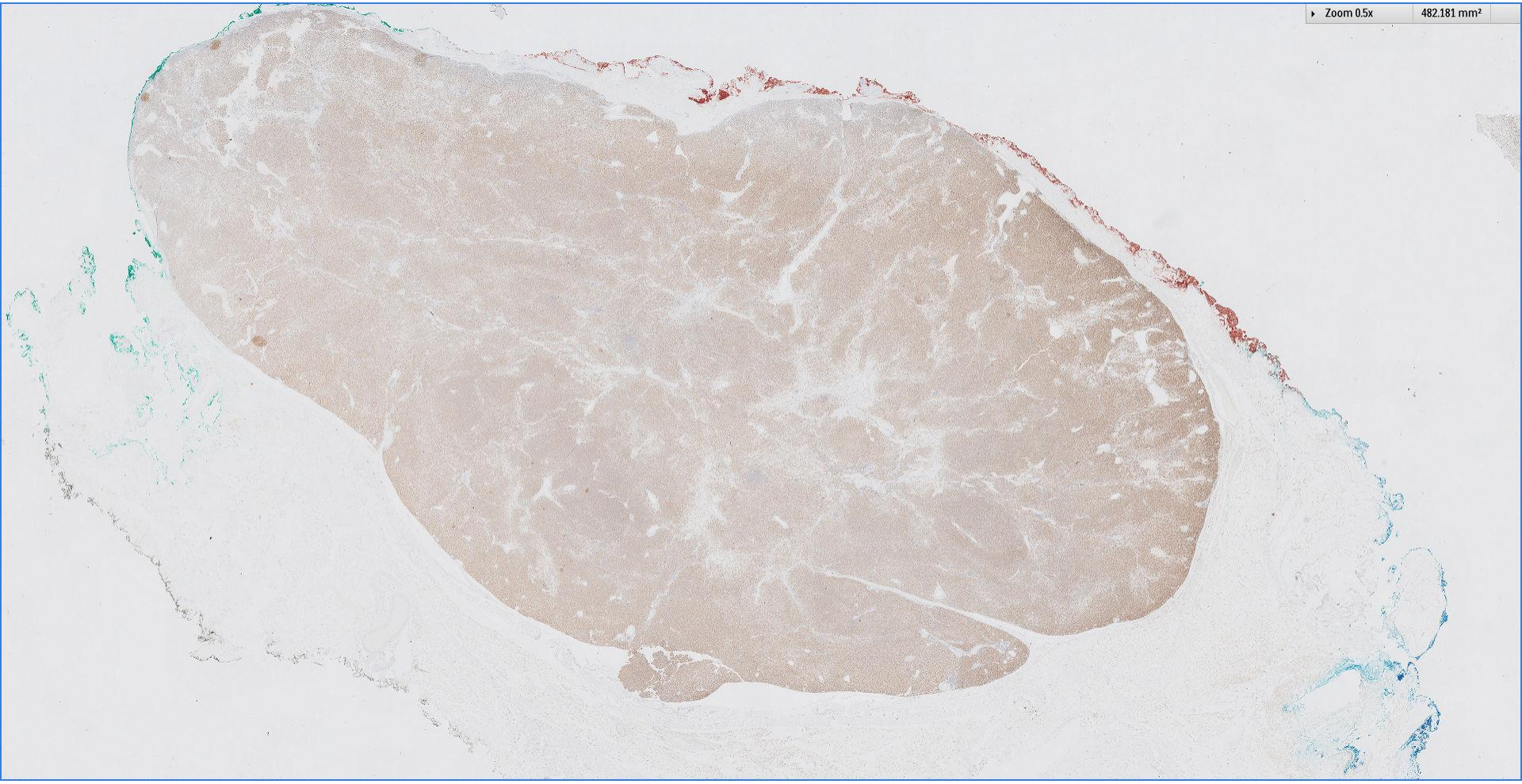
CD99



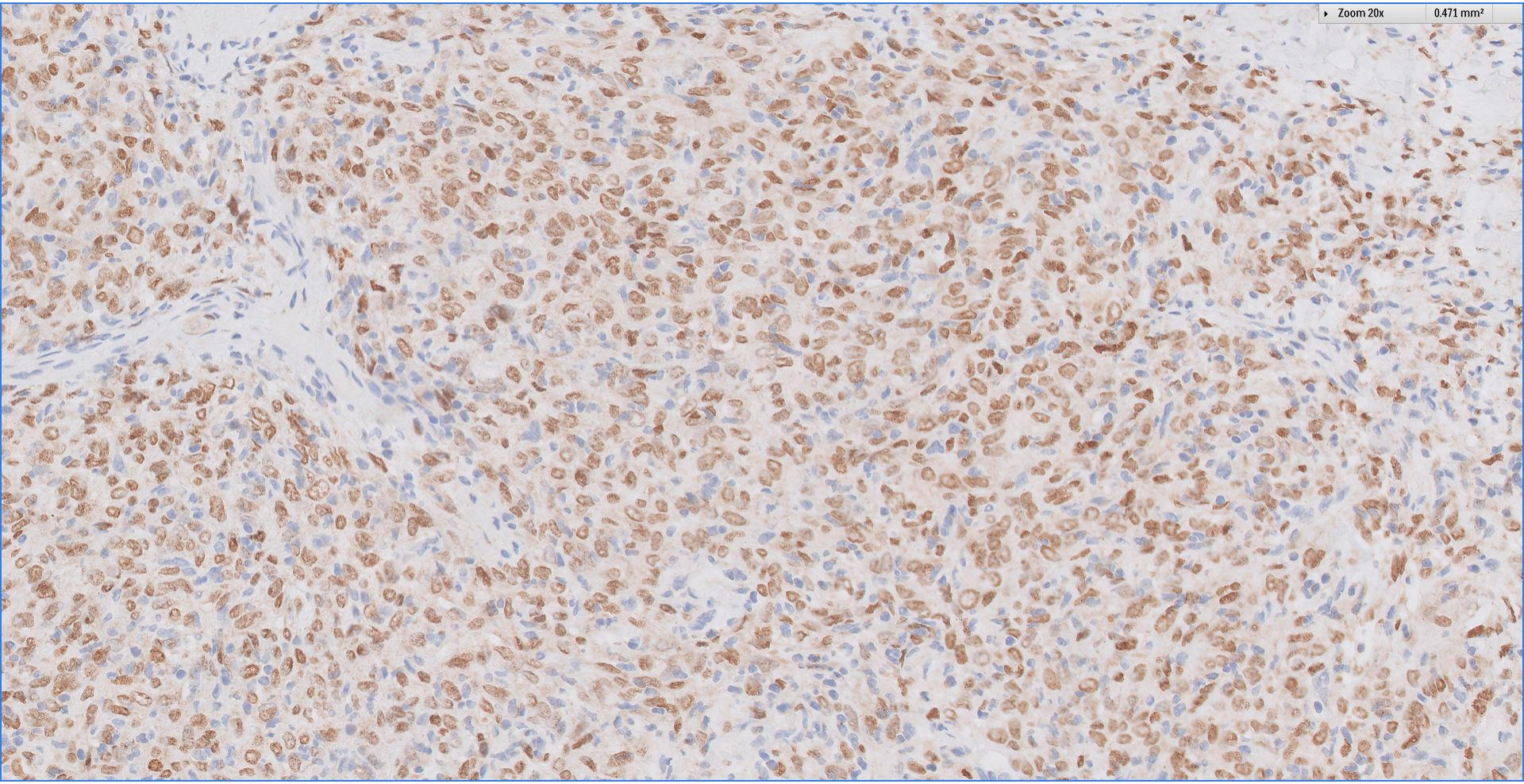
CD99



STAT6



STAT6



Ki67

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Immunohistochemistry ~

CD34, STAT6, CD99, bcl2: diffuse positivity of lesional cells.
SMMS, SMA, ERG, CD31: vessels within the tumour are decorated
EMA: patchy focal and weak reactivity of lesional cells.
S100, SOX10, CD21: negative.
Ki67 proliferation is less than 10% in the lesional cells.
ALK, desmin, MF116, CK7: negative.
p63: Focal and patchy nuclear reactivity.

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Diagnosis

Consistent with a cellular solitary fibrous tumour

Note: Additional information provided after radiological-pathological discussion disclosed that the lesion is in the subcutaneous layer between the skin and skeletal muscle in the axillary region

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Solitary fibrous tumour

- Clinical behaviour is difficult to predict.
- Risk stratification model *(Enzinger & Weiss's Soft Tissue Tumours 7th edition, page 1147)* ~
  - Patient age 39 years (score 0)
  - Tumour size 25mm (score 0)
  - No mitoses (score 0)
  - No necrosis (score 0)
  - Total score 0
  - **Low risk level**
- Continued follow-up is suggested in view of mild nuclear atypia.

Solitary fibrous tumor ~ *risk stratification model*

Risk factor	Score	Metastasis-free rate: 5 year; 10 year
Age (years)		
< 55	0	
> 55	1	
Tumour size (cm)		
< 5	0	
5 to < 10	1	
10 to < 15	2	
> 15	3	
Mitotic activity (per 10hpf)		
0	0	
1-3	1	
> 4	2	
Tumour necrosis		
< 10%	0	
> 10%	1	
Level of Risk		
Low	0-3	100%
Moderate	4-5	69%; 50%
High	6-7	0%; 0%

Enzinger & Weiss's Soft Tissue Tumours 7th edition, page 1147

Am J Clin Pathol. 2012 Jun;137(6):963-70.

Solitary fibrous tumor: is there a molecular relationship with cellular angiofibroma, spindle cell lipoma, and mammary-type myofibroblastoma?

Fritchie KJ, Carver P, Sun Y, Batiouchko G, Billings SD, Rubin BP, Tubbs RR, Goldblum JR.

- Solitary fibrous tumor (SFT) is a mesenchymal tumor characterized by ovoid cells, branching blood vessels, stromal hyalinization, and CD34 immunoreactivity.
- Studies have shown loss of 13q in a group of morphologically similar entities, including cellular angiofibroma, mammary-type myofibroblastoma, and spindle cell lipoma.
- The histologic and immunophenotypic overlap between SFT and the latter group of tumors suggests that these tumors may be genetically linked.
- We tested a group of 40 SFTs to assess for loss of RB1 (13q14) by fluorescence in situ hybridization (FISH).
- ***All 38 SFTs with evaluable signals failed to show loss of RB1 (13q14) by FISH.***
- All cases of cellular angiofibroma (1/1), spindle cell lipoma (6/6), and mammary-type myofibroblastoma (4/4), which were used as a control group, showed monoallelic or biallelic loss of RB1.
- ***The absence of RB1 loss in SFTs suggests that they are not related to cellular angiofibroma, mammary-type myofibroblastoma, or spindle cell lipoma.***

Pathol Res Pract. 2018 Oct;214(10):1544-1549.

STAT6 expression in spindle cell lesions of the breast: An immunohistochemical study of 48 cases.

Magro G, Spadola S, Motta F, Palazzo J, Catalano F, Vecchio GM, Salvatorelli L.

The diagnosis of spindle cell lesions of the breast parenchyma is challenging. Some of these lesions share the expression of CD34, posing differential diagnostic problems, especially in core biopsies. Recently, antibodies against the STAT6 C-terminal, are being used in paraffin-embedded tissues as a surrogate for identifying the NAB2-STA6 fusion gene which is considered a specific molecular marker for solitary fibrous tumor. Accordingly, we investigated the expression of STAT6 in a large series of uncommon spindle cell tumor-like and tumor lesions occurring primarily in the breast parenchyma.

We collected 10 classic-type myofibroblastomas, 9 desmoid-type fibromatosis, 6 spindle cell metaplastic carcinoma, 5 benign fibroblastic spindle cell tumors, 3 solitary fibrous tumors, 7 pseudoangiomatous stromal hyperplasias, 2 reactive spindle cell nodules, 1 leiomyoma, 1 spindle cell lipoma, 1 case of inflammatory pseudotumor, 1 nodular fasciitis, 1 myxoma and 1 dermatofibrosarcoma protuberans. **A diffuse and strong nuclear STAT6 expression was restricted only to solitary fibrous tumors, while the other lesions were negative or showed only weak cytoplasmic expression.** The present study confirms that the demonstration of a diffuse and strong STAT6 nuclear staining is very helpful in distinguishing solitary fibrous tumor from other spindle cell mimics arising in the breast.

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Thank You

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