

Case 17

64 year old Malay female.

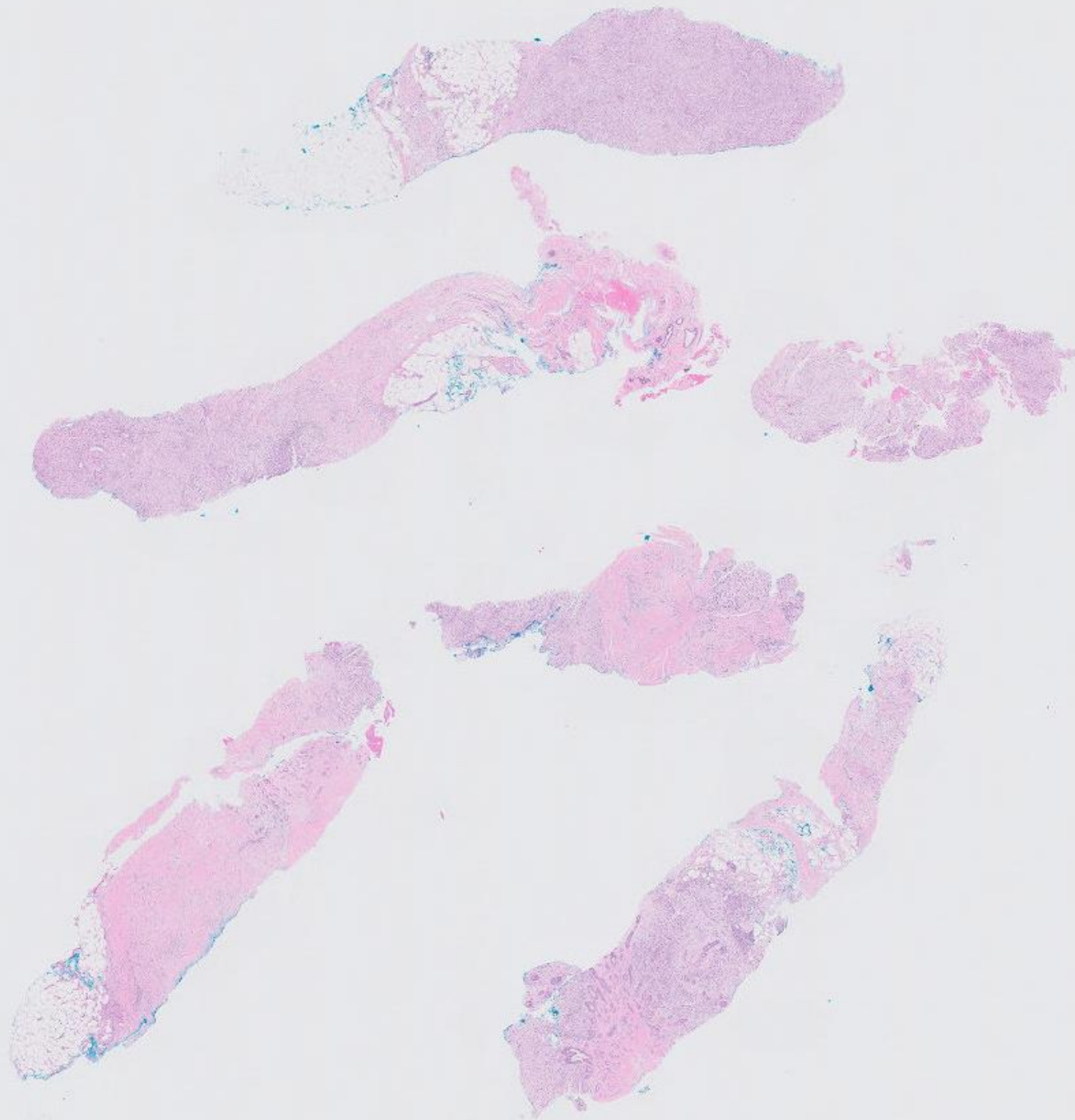
Previously diagnosed with left breast periductal stromal tumour 3 years prior to current presentation of a recurrent left breast lump.

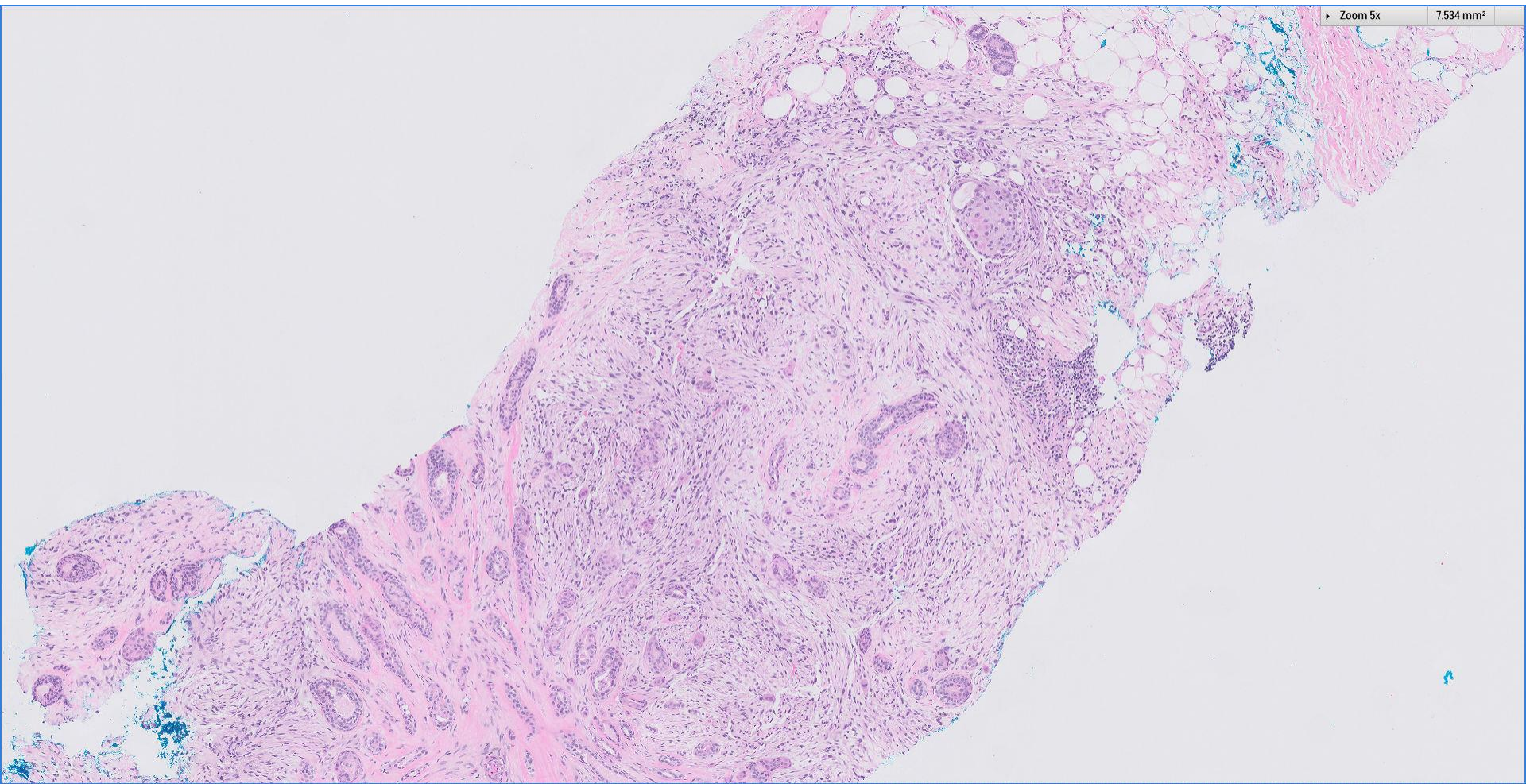
US trucut biopsy was performed, followed by wide excision.

Presented by Puay Hoon Tan

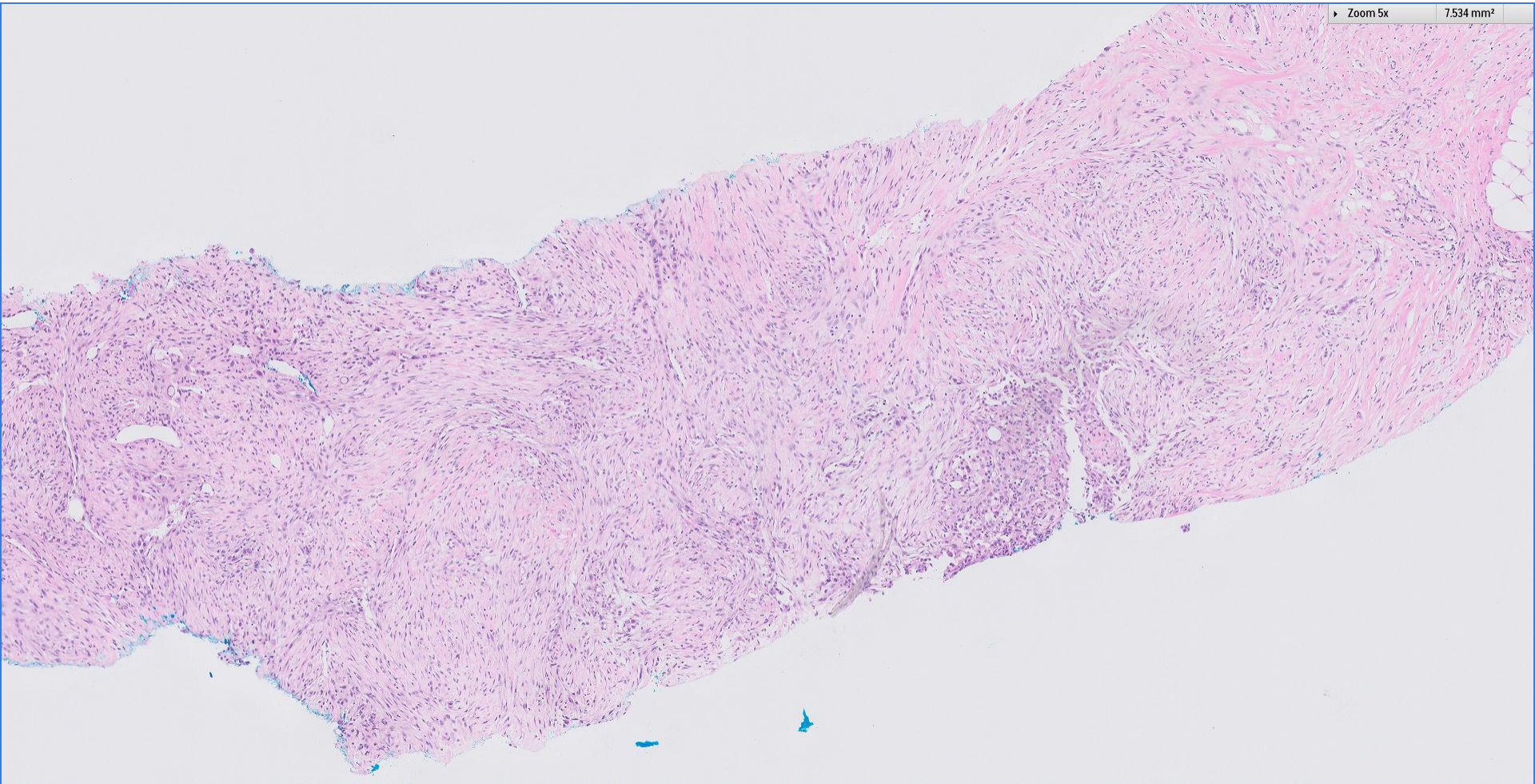


Ultrasound guided trucut biopsy



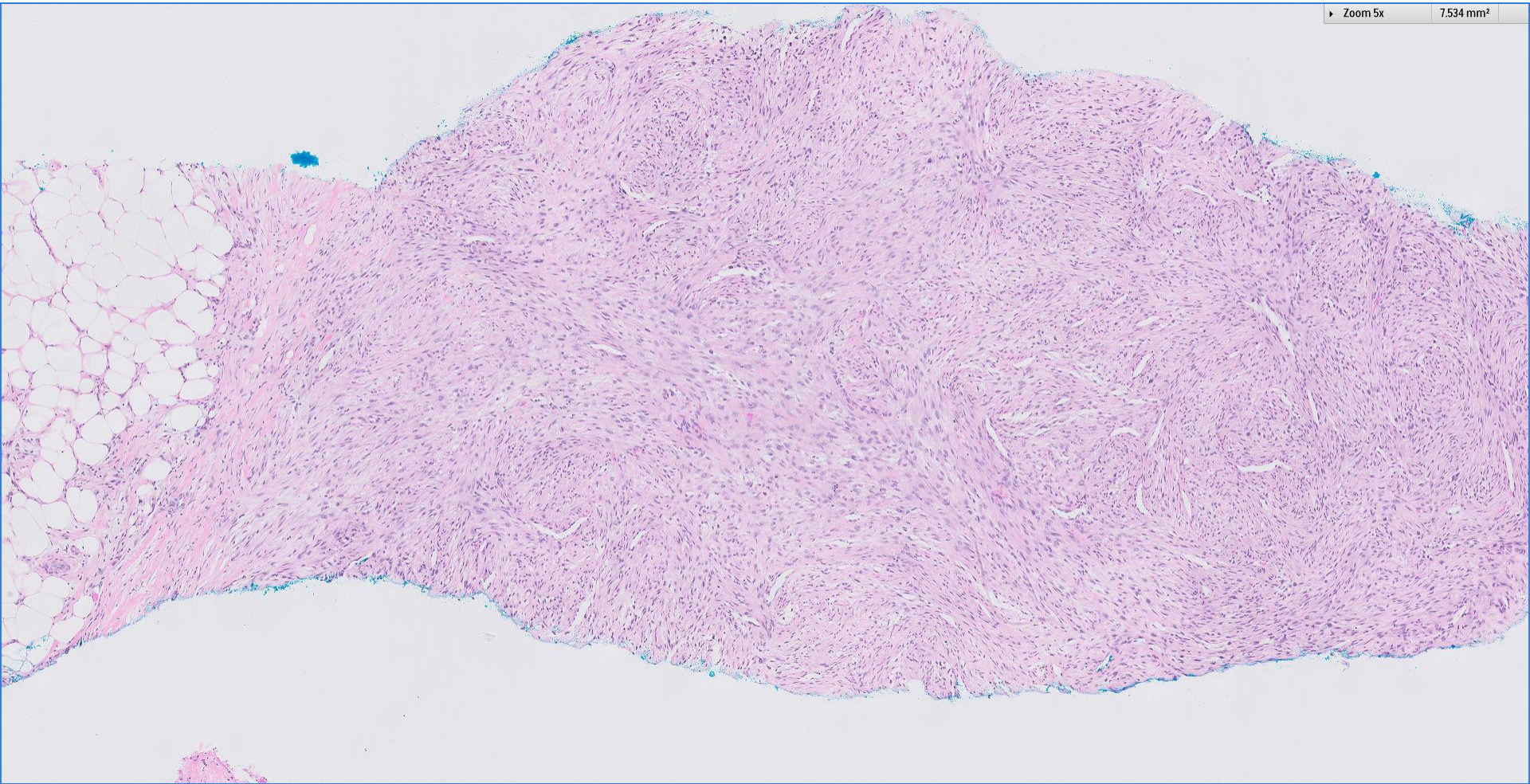


Zoom 5x 7.534 mm²



Division of Pathology
Singapore General Hospital

SingHealth DukeNUS
ACADEMIC MEDICAL CENTRE
PATHOLOGY

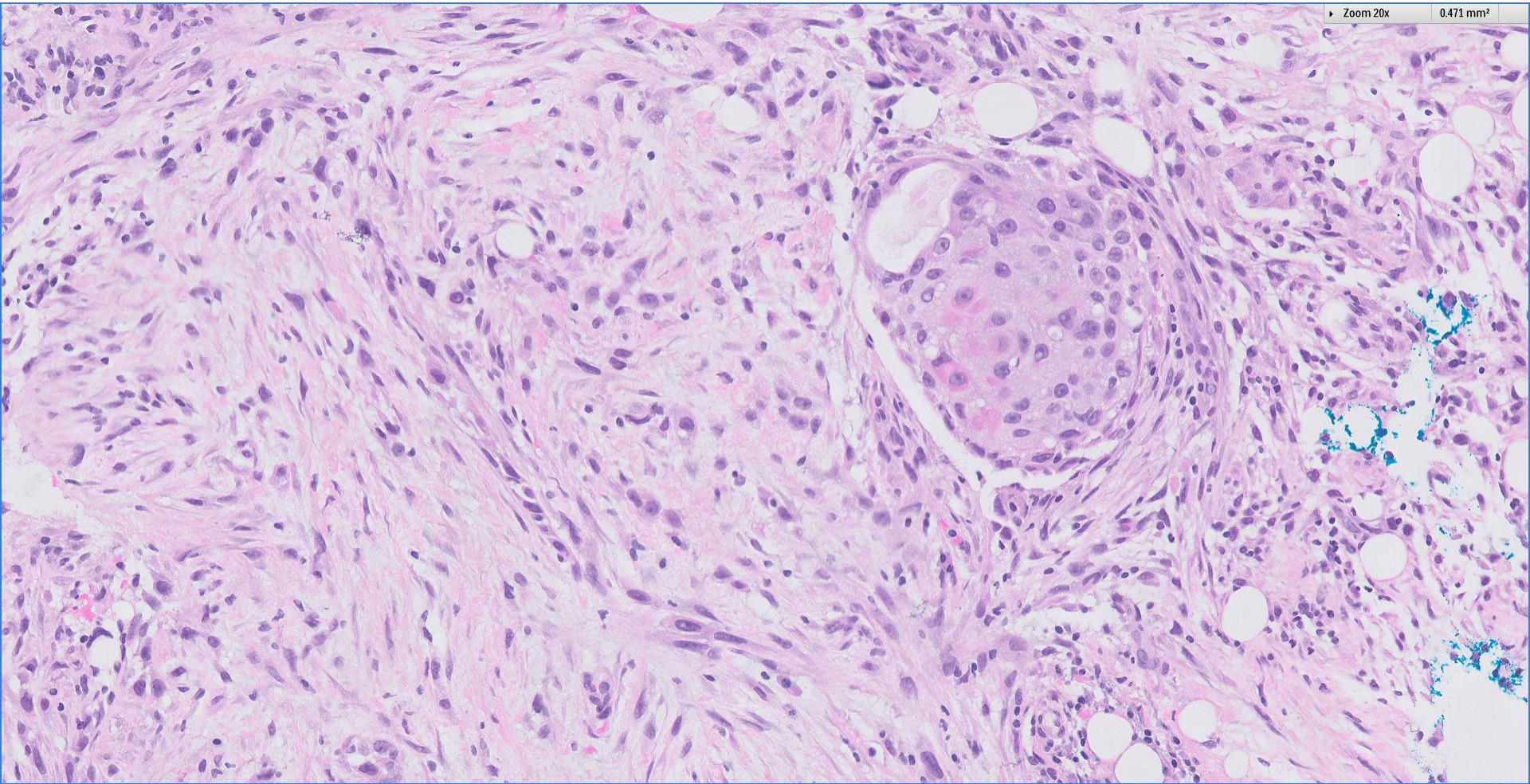


Zoom 5x 7.534 mm²



Division of Pathology
Singapore General Hospital

SingHealth DukeNUS
ACADEMIC MEDICAL CENTRE
PATHOLOGY



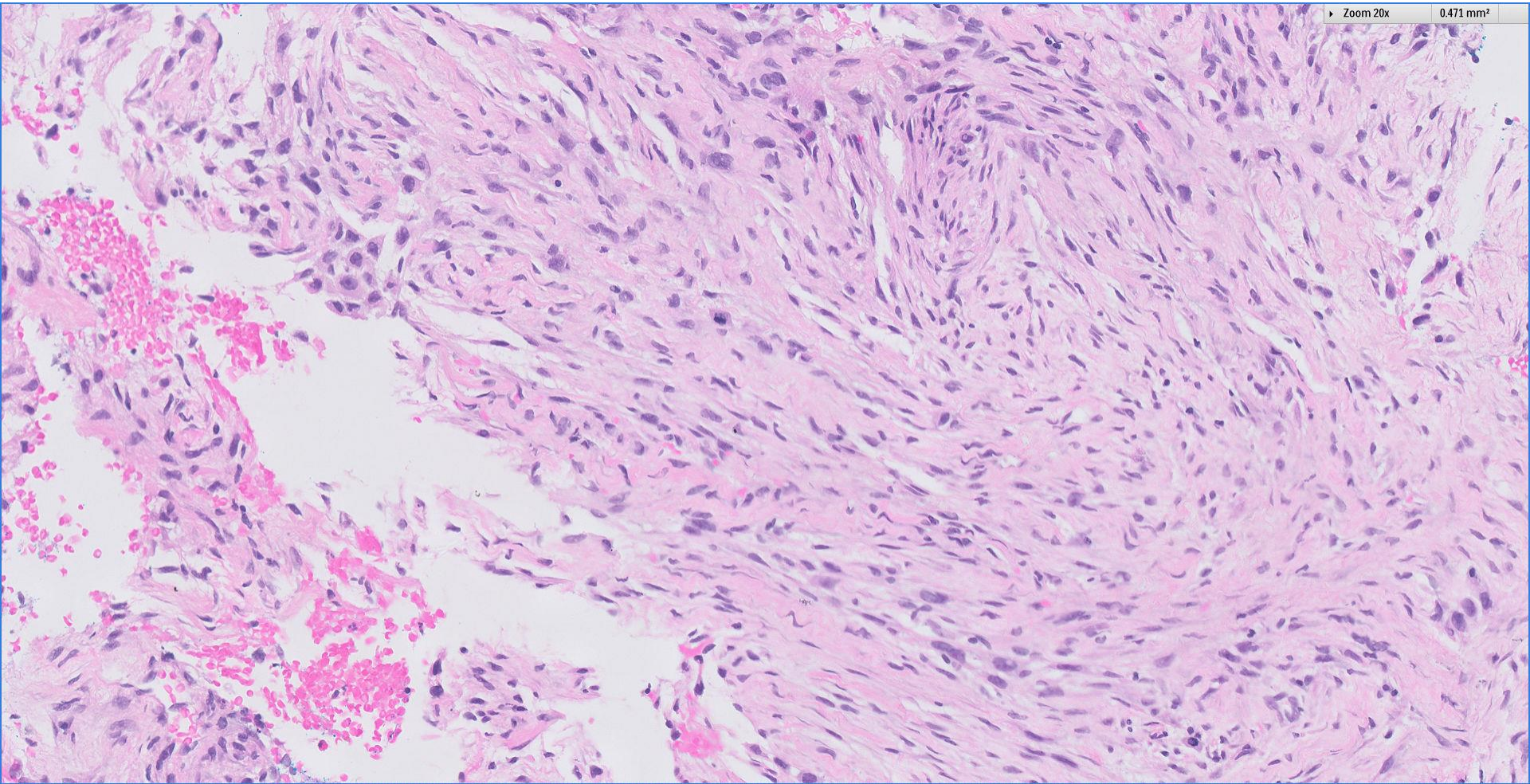
Zoom 20x 0.471 mm²



Division of Pathology
Singapore General Hospital

SingHealth DukeNUS
ACADEMIC MEDICAL CENTRE

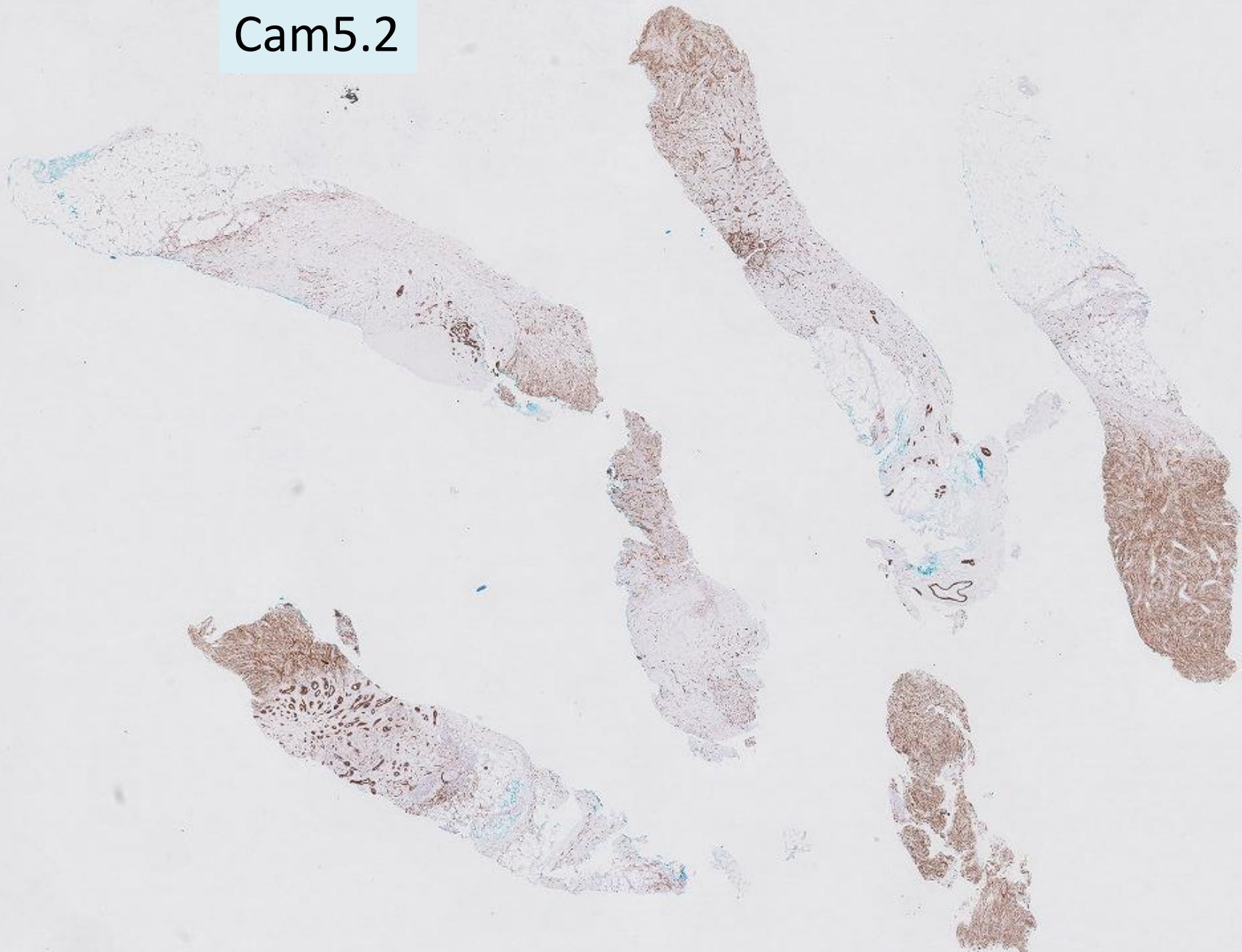
PATHOLOGY



Division of Pathology
Singapore General Hospital

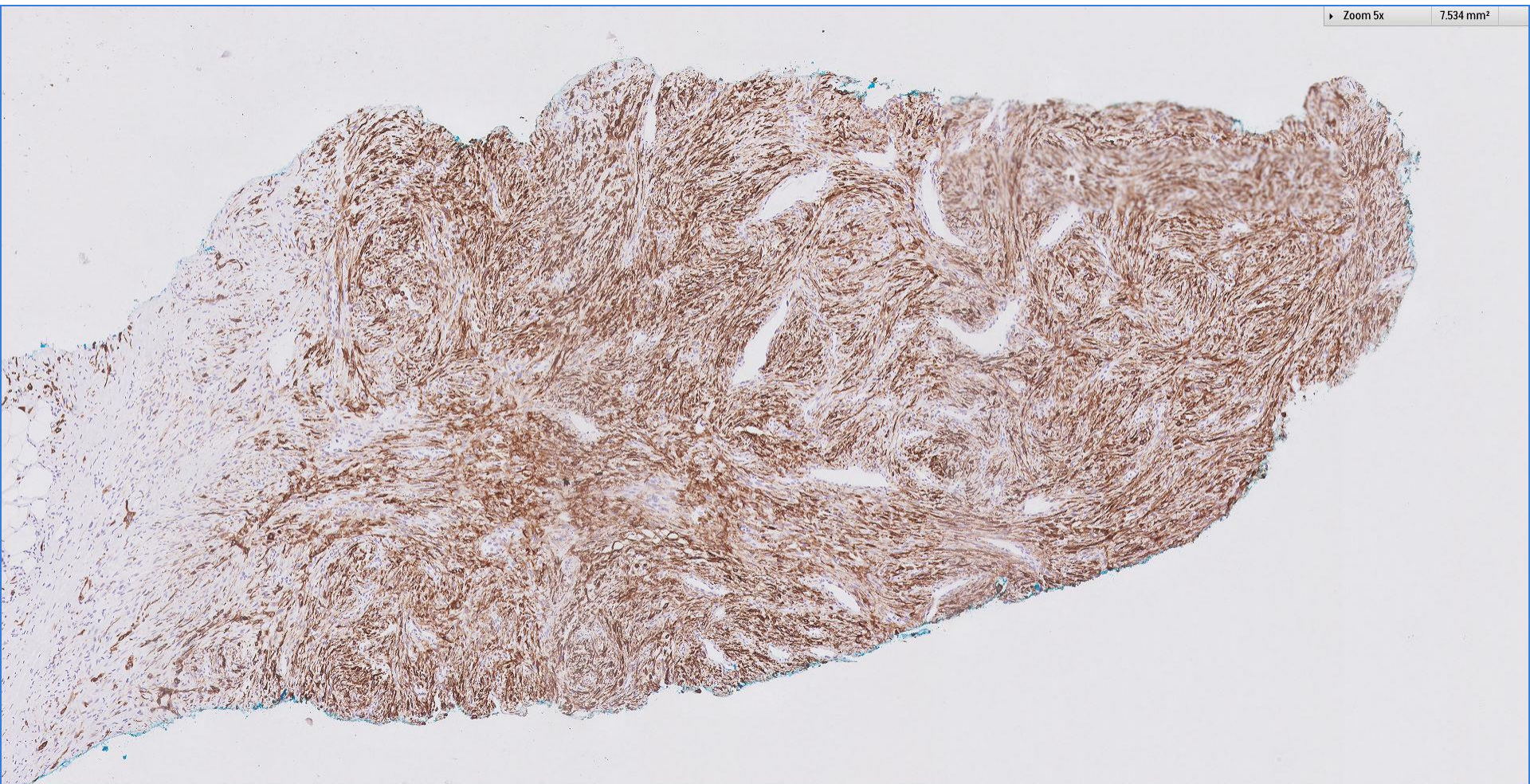
SingHealth DukeNUS
ACADEMIC MEDICAL CENTRE
PATHOLOGY

Cam5.2

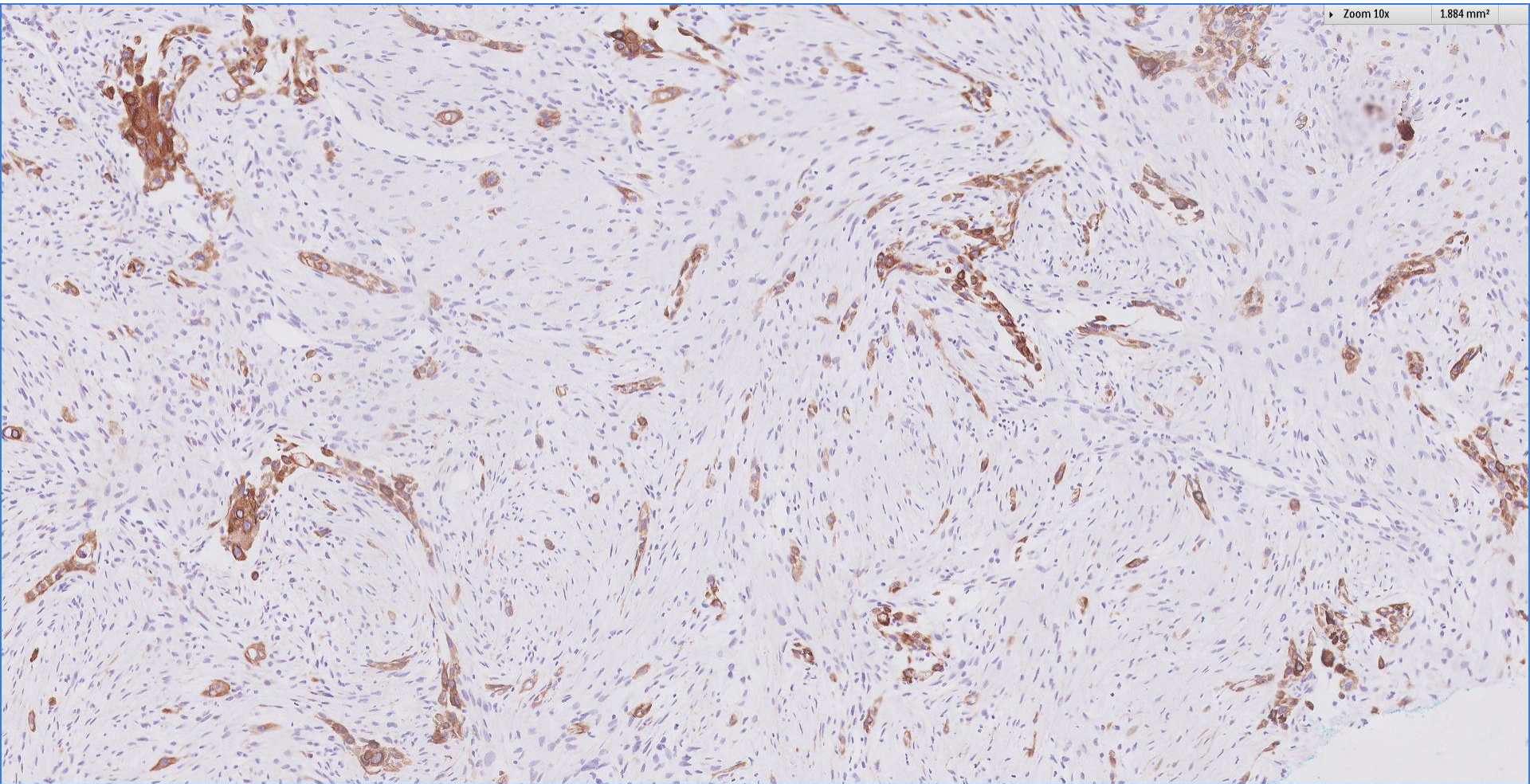


Cam5.2

Zoom 5x 7.534 mm²



AE1/3



Division of Pathology
Singapore General Hospital

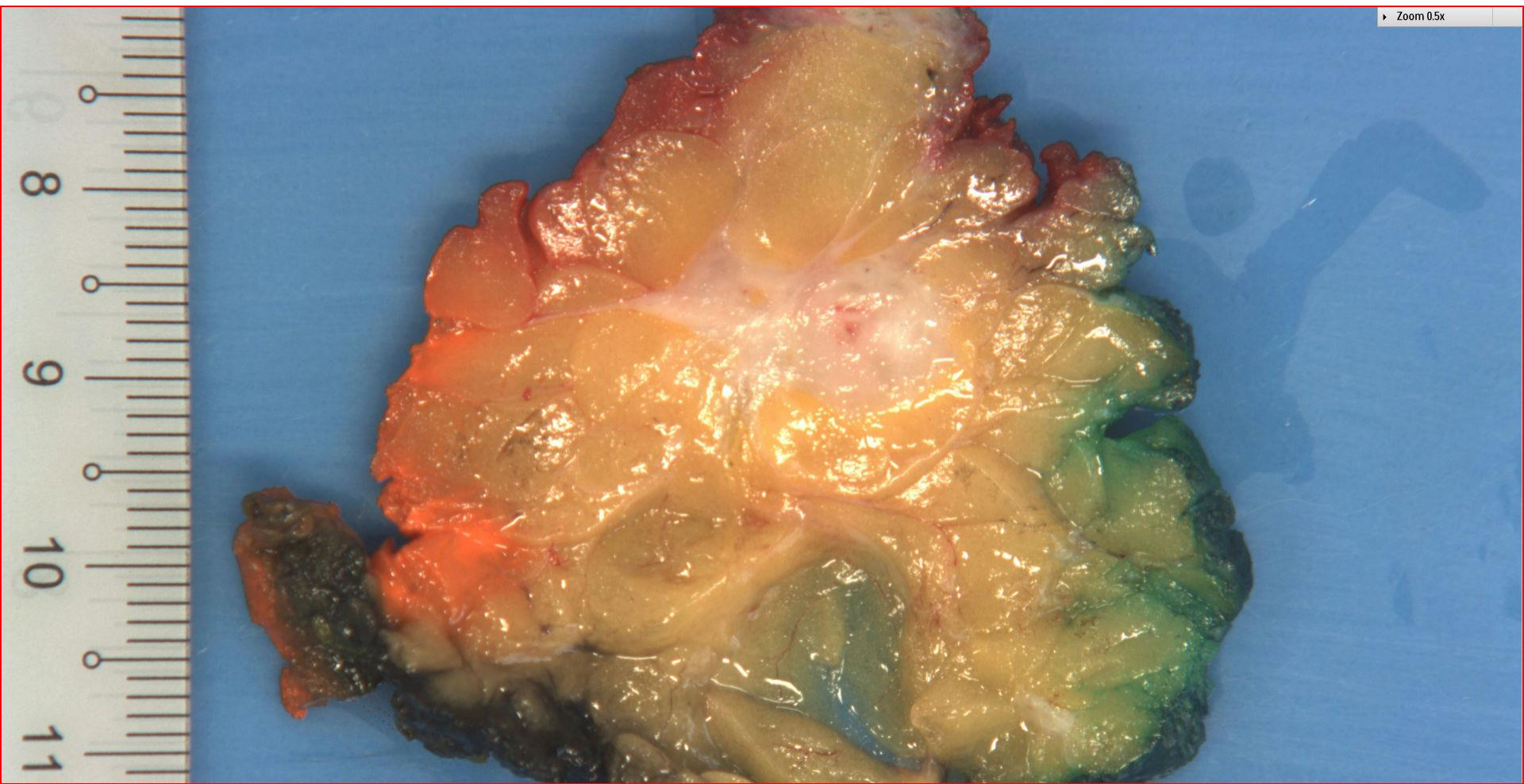
SingHealth DukeNUS
ACADEMIC MEDICAL CENTRE
PATHOLOGY

Diagnosis ~

*Malignant spindle cell lesion,
consistent with metaplastic
carcinoma, provisional grade 2.*

- Diffuse positive staining for p63/CK14, MNF116.
- Patchy weaker staining is noted for CK5/6 and 34BE12.

Wide excision biopsy

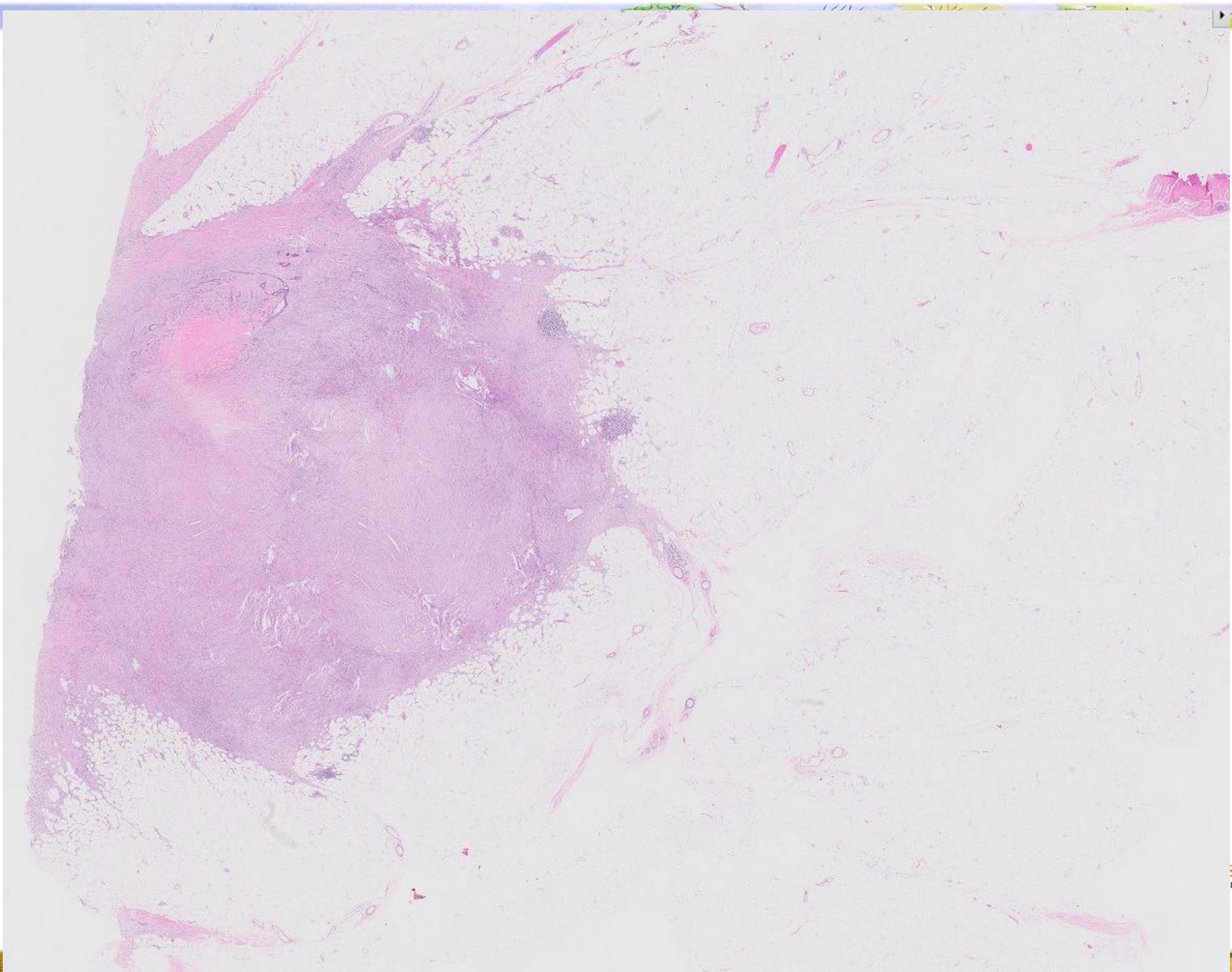


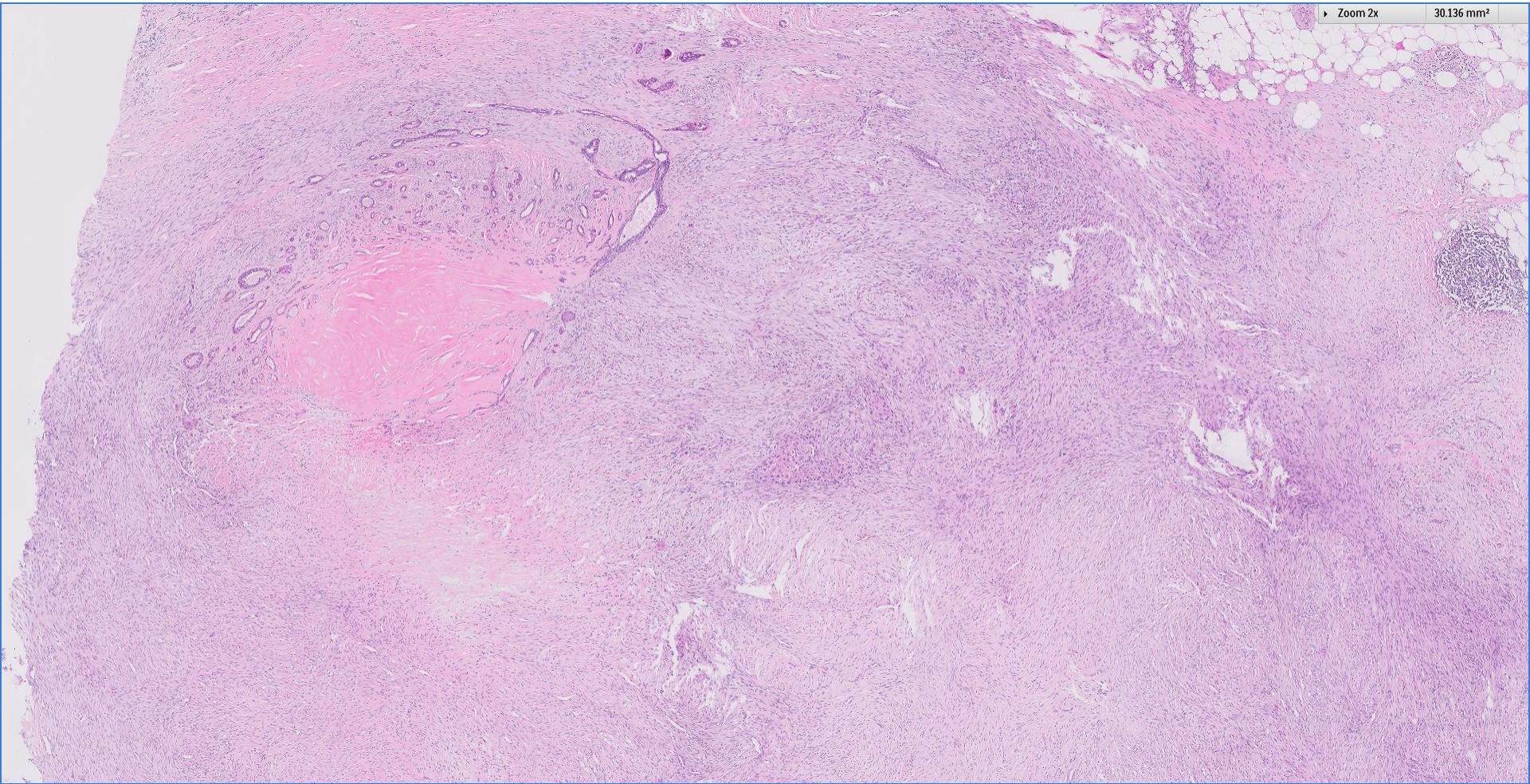
Zoom 0.5x



Division of Pathology
Singapore General Hospital

SingHealth DukeNUS
ACADEMIC MEDICAL CENTRE
PATHOLOGY



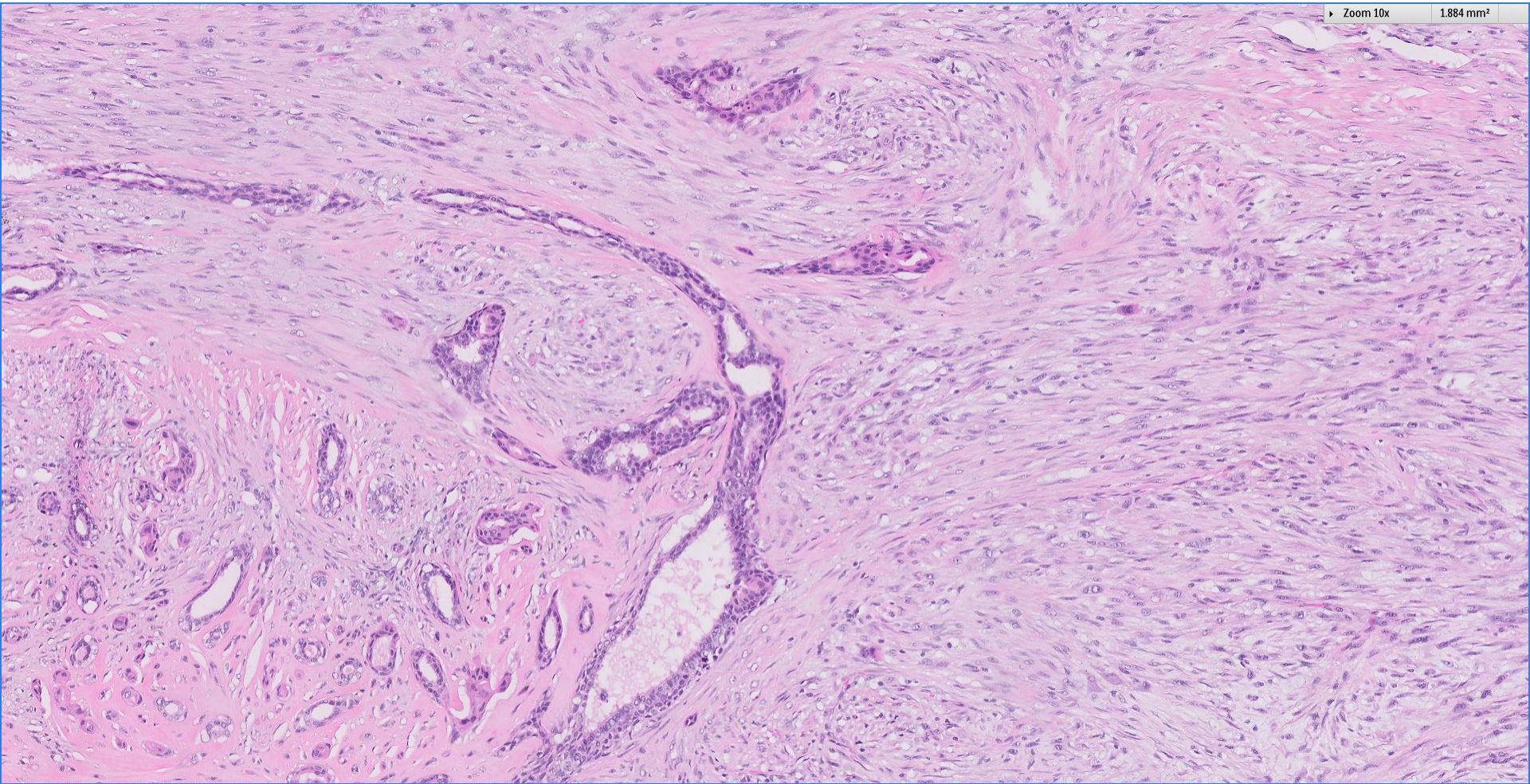


Zoom 2x 30.136 mm²



Division of Pathology
Singapore General Hospital

SingHealth DukeNUS
ACADEMIC MEDICAL CENTRE
PATHOLOGY



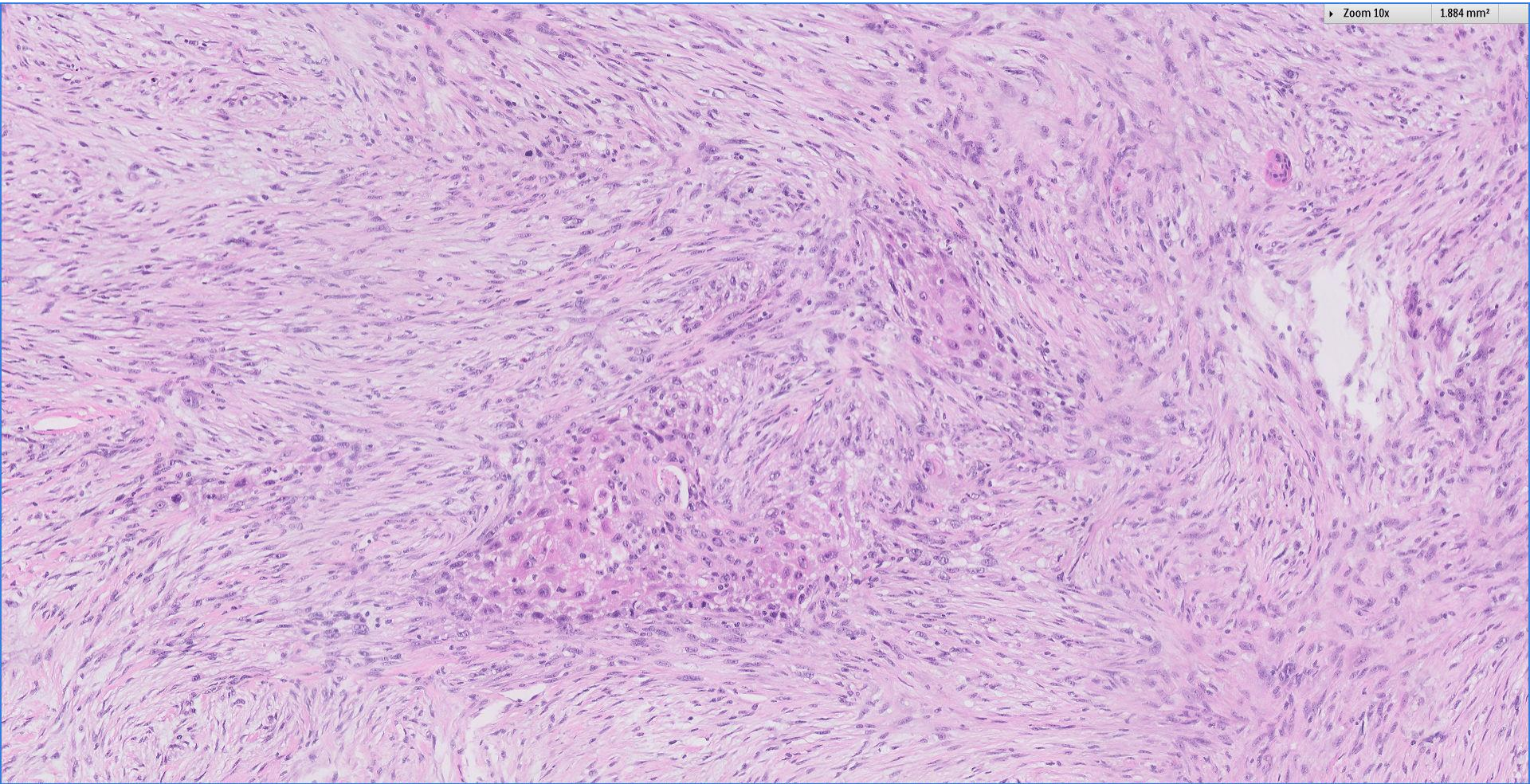
Zoom 10x 1.884 mm²



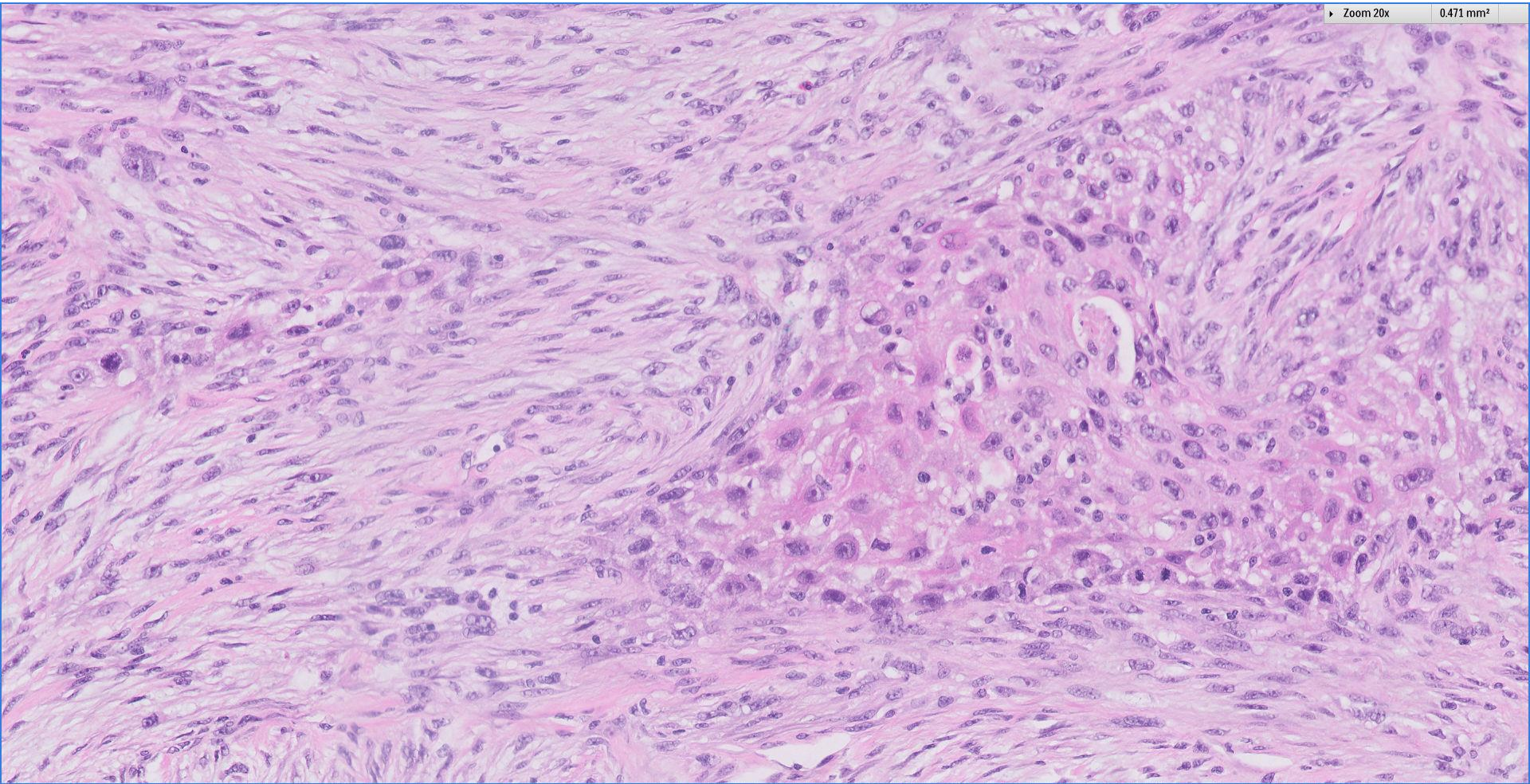
Division of Pathology
Singapore General Hospital

SingHealth DukeNUS
ACADEMIC MEDICAL CENTRE

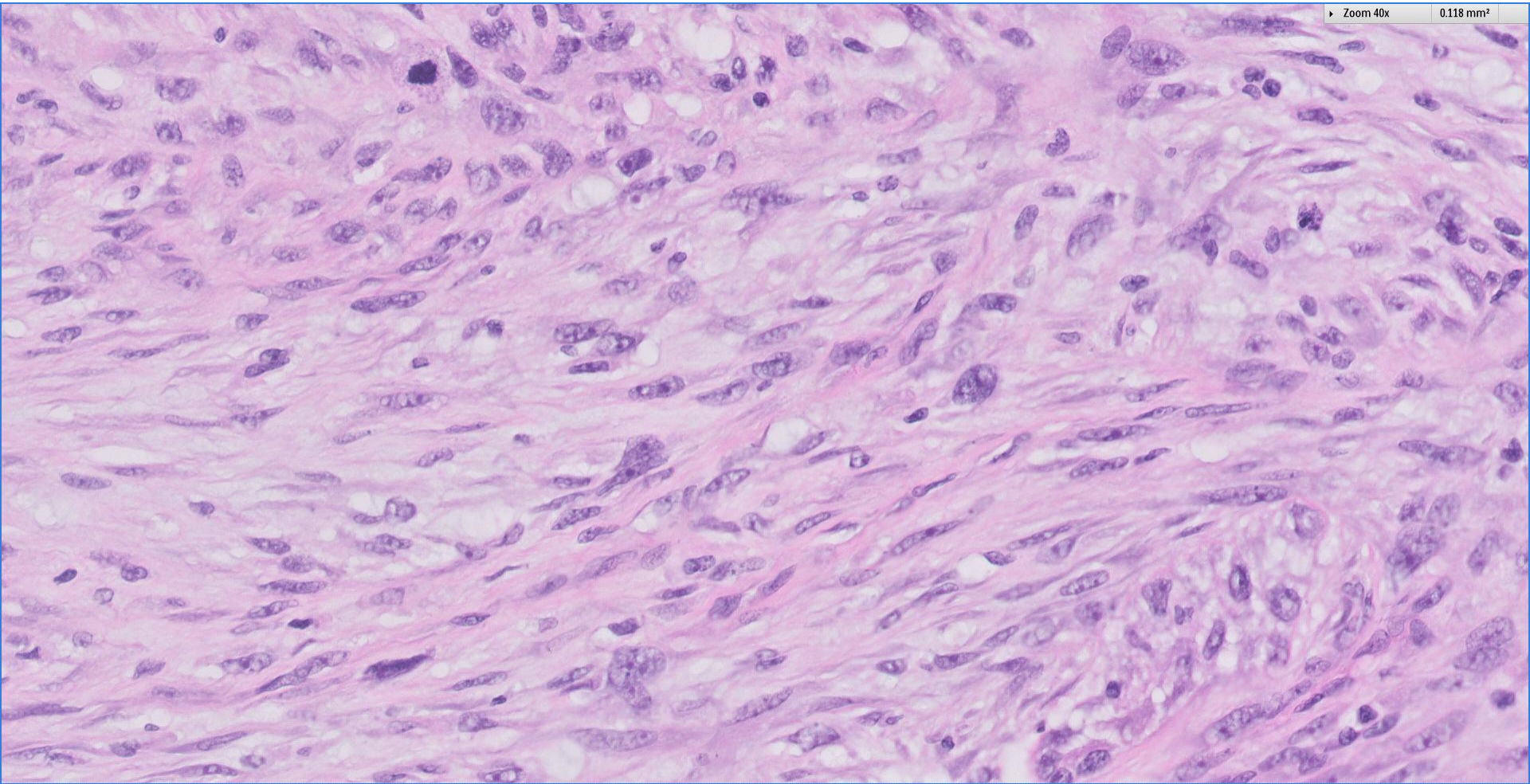
PATHOLOGY



Zoom 10x 1.884 mm²



Zoom 20x 0.471 mm²

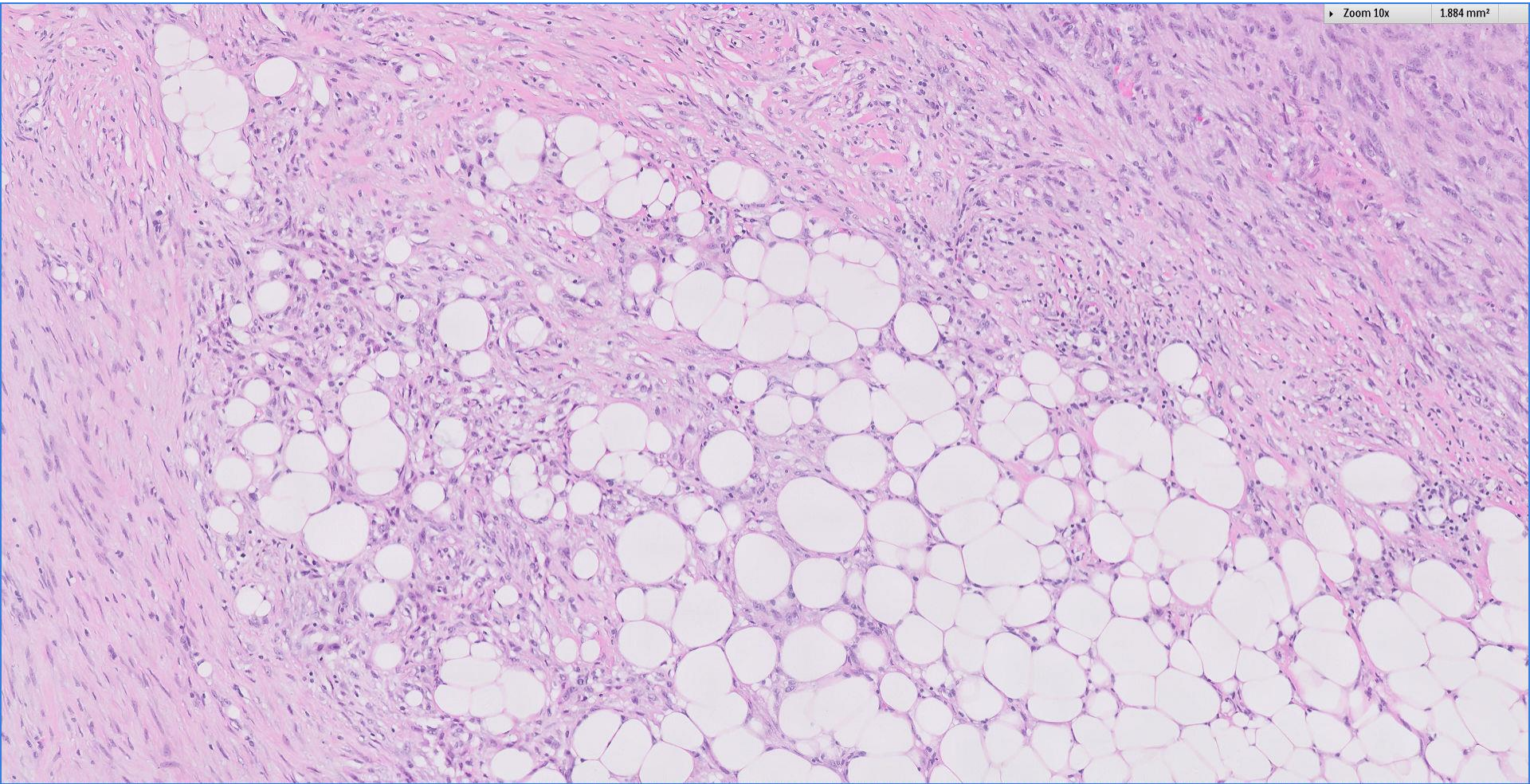


Zoom 40x 0.118 mm²



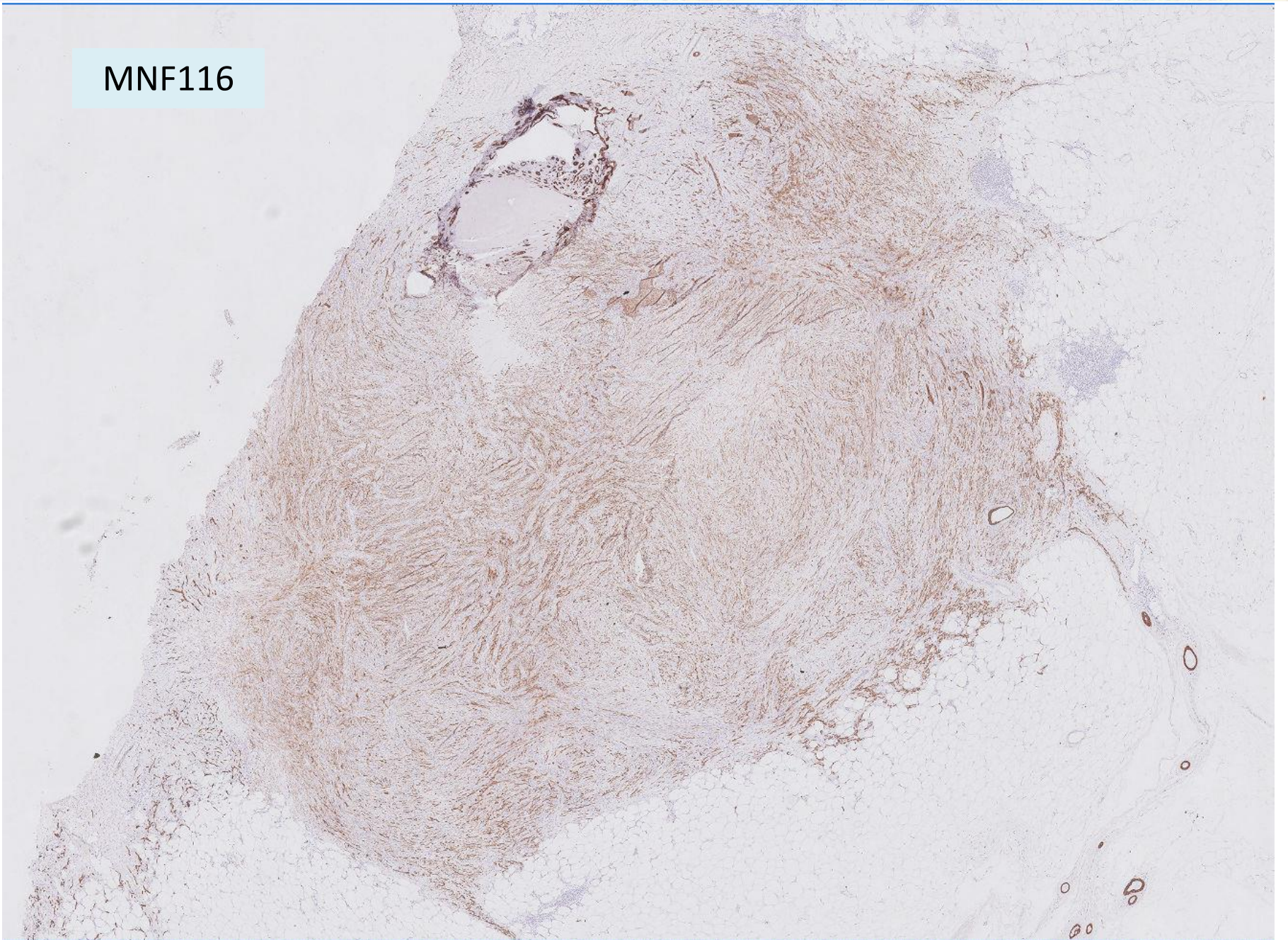
Division of Pathology
Singapore General Hospital

SingHealth DukeNUS
ACADEMIC MEDICAL CENTRE
PATHOLOGY

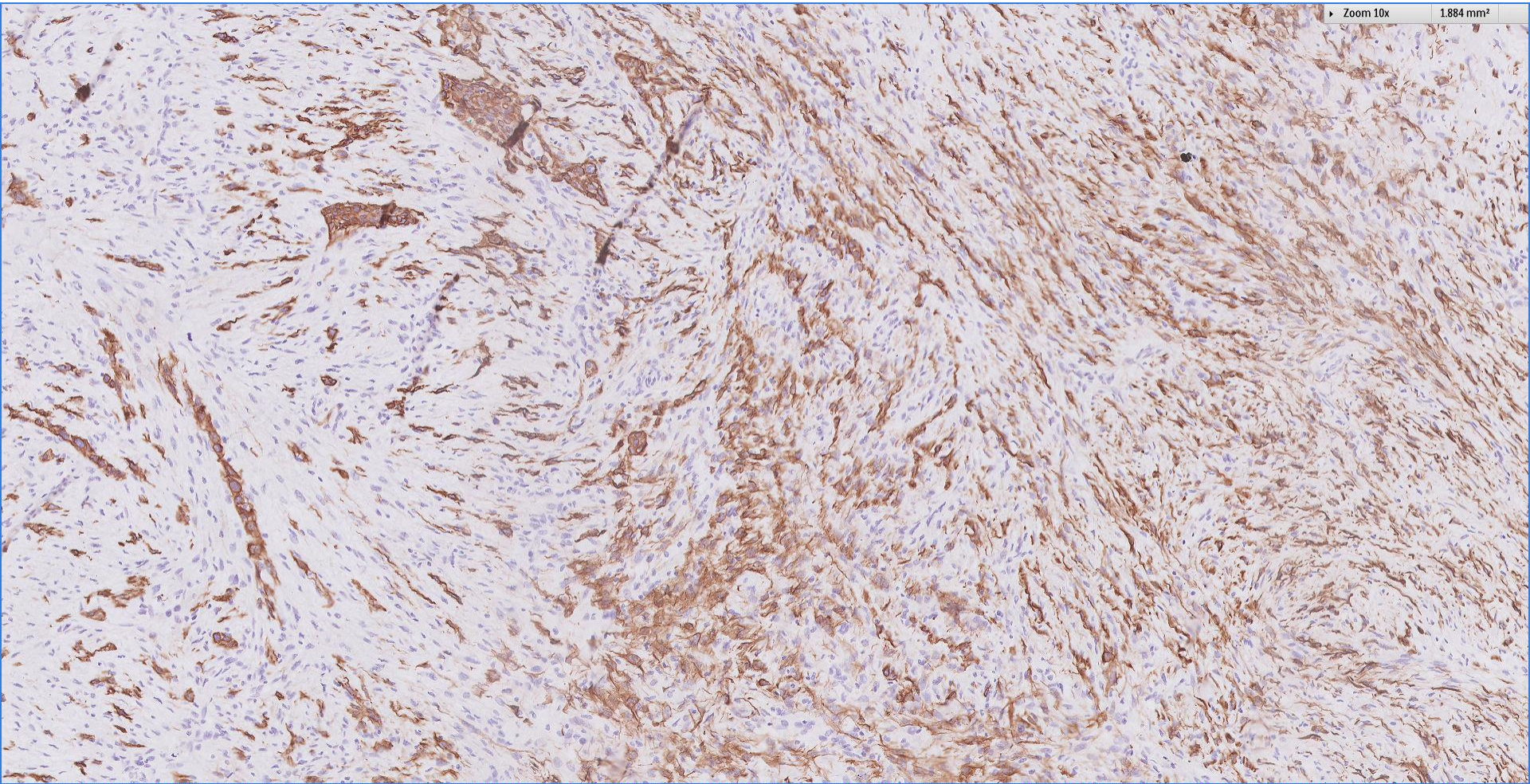


Zoom 10x 1.884 mm²

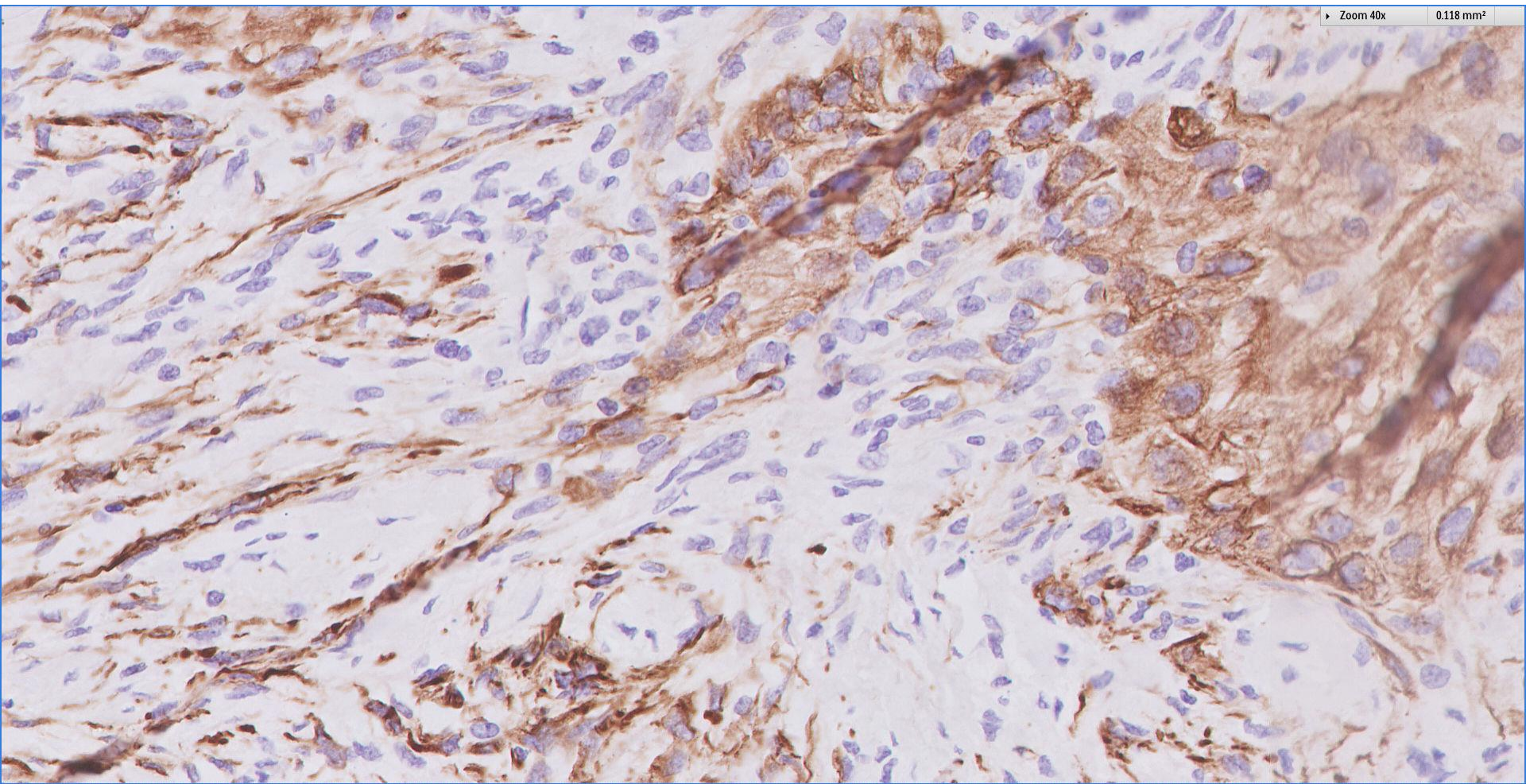
MNF116



MNF116



MNF116



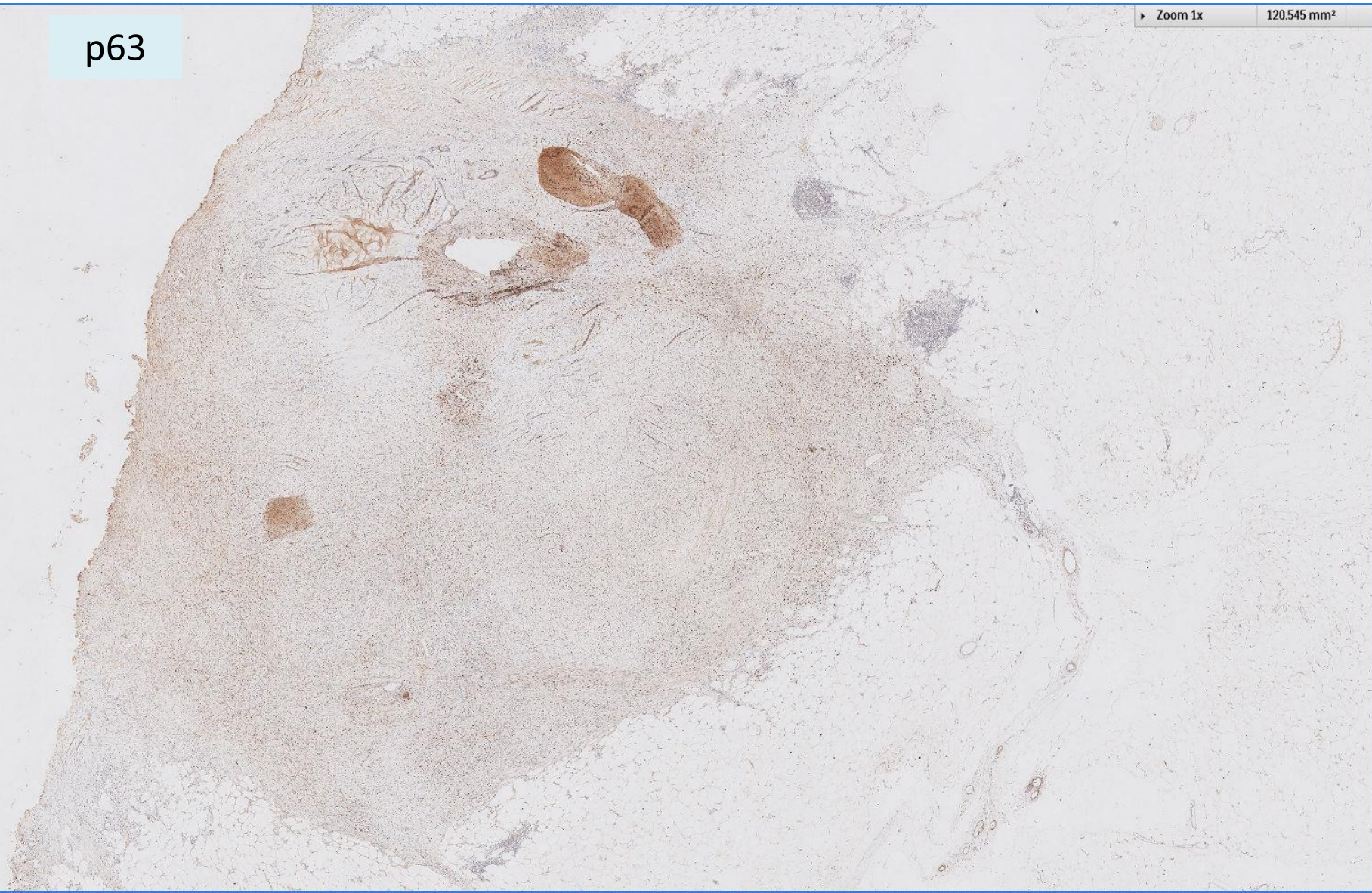
Division of Pathology
Singapore General Hospital

SingHealth DukeNUS
ACADEMIC MEDICAL CENTRE
PATHOLOGY

p63

Zoom 1x

120.545 mm²

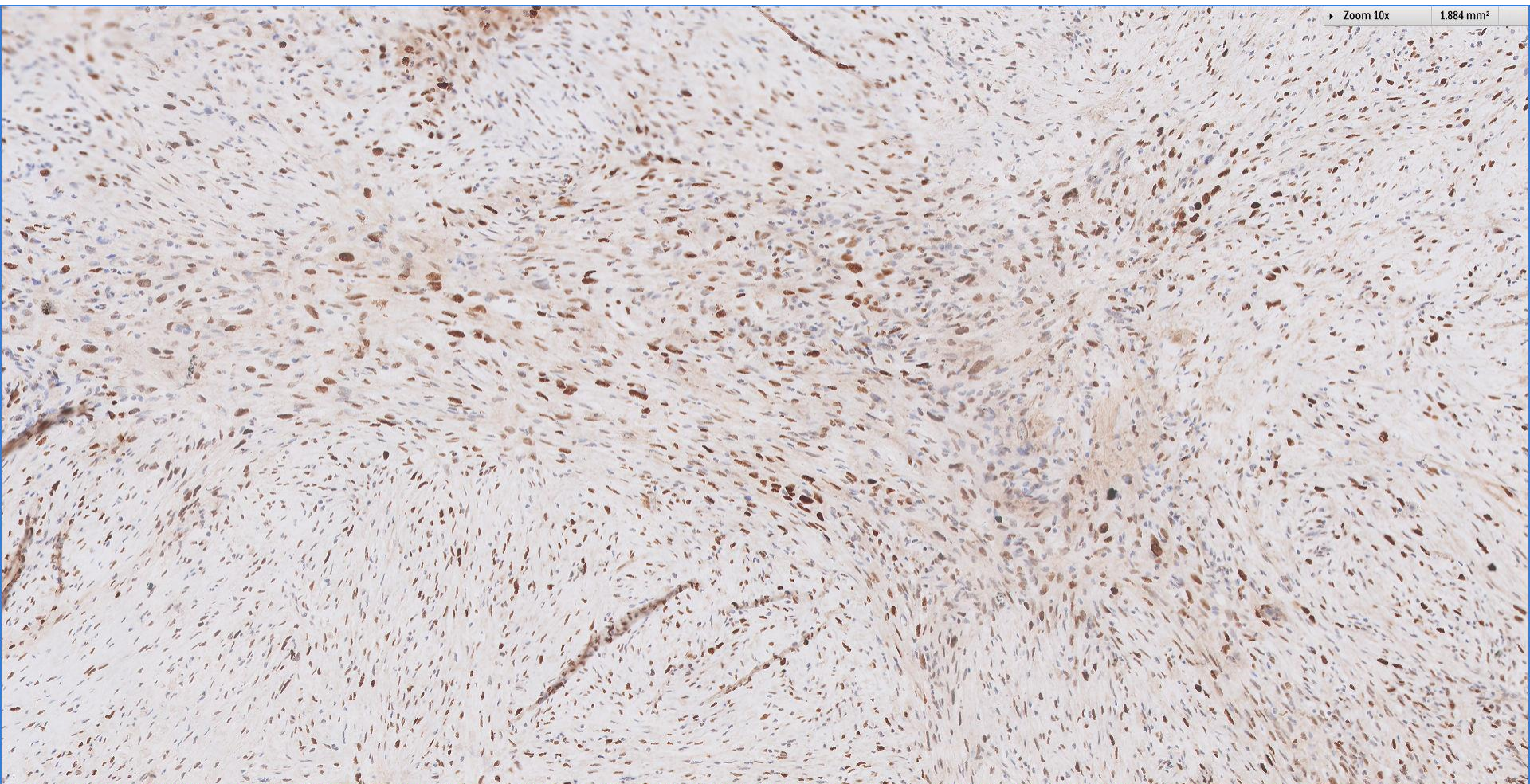


Division of Pathology
Singapore General Hospital

ACADEMIC MEDICAL CENTRE

PATHOLOGY

p63



Division of Pathology
Singapore General Hospital

SingHealth DukeNUS
ACADEMIC MEDICAL CENTRE

PATHOLOGY

Diagnosis ~

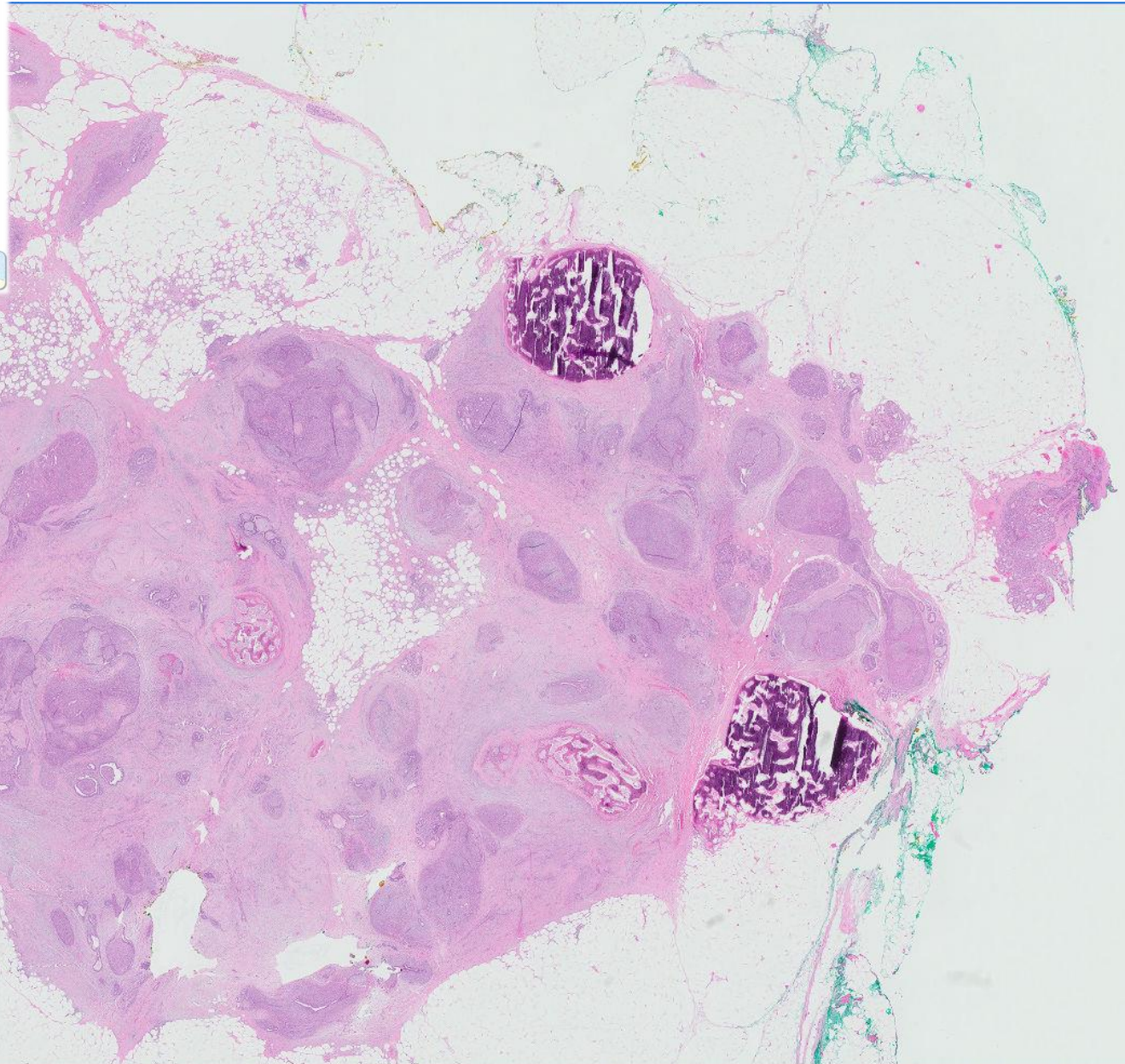
- Metaplastic spindle cell carcinoma, grade 3, 23mm.
- Triple negative.
- 3 benign sentinel lymph nodes.

Case 5

61 year old Malay female.

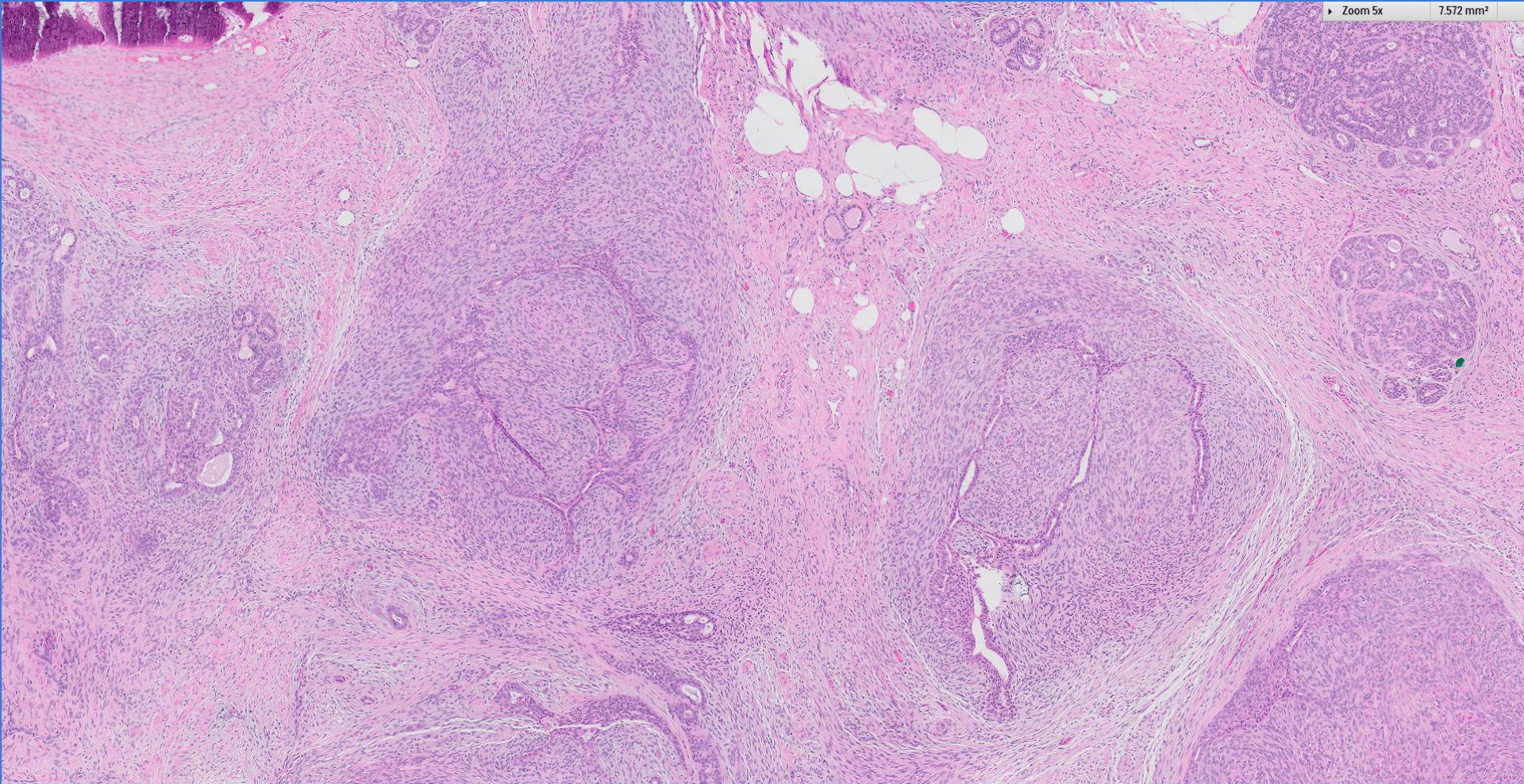
Excision biopsy of left breast tumour.

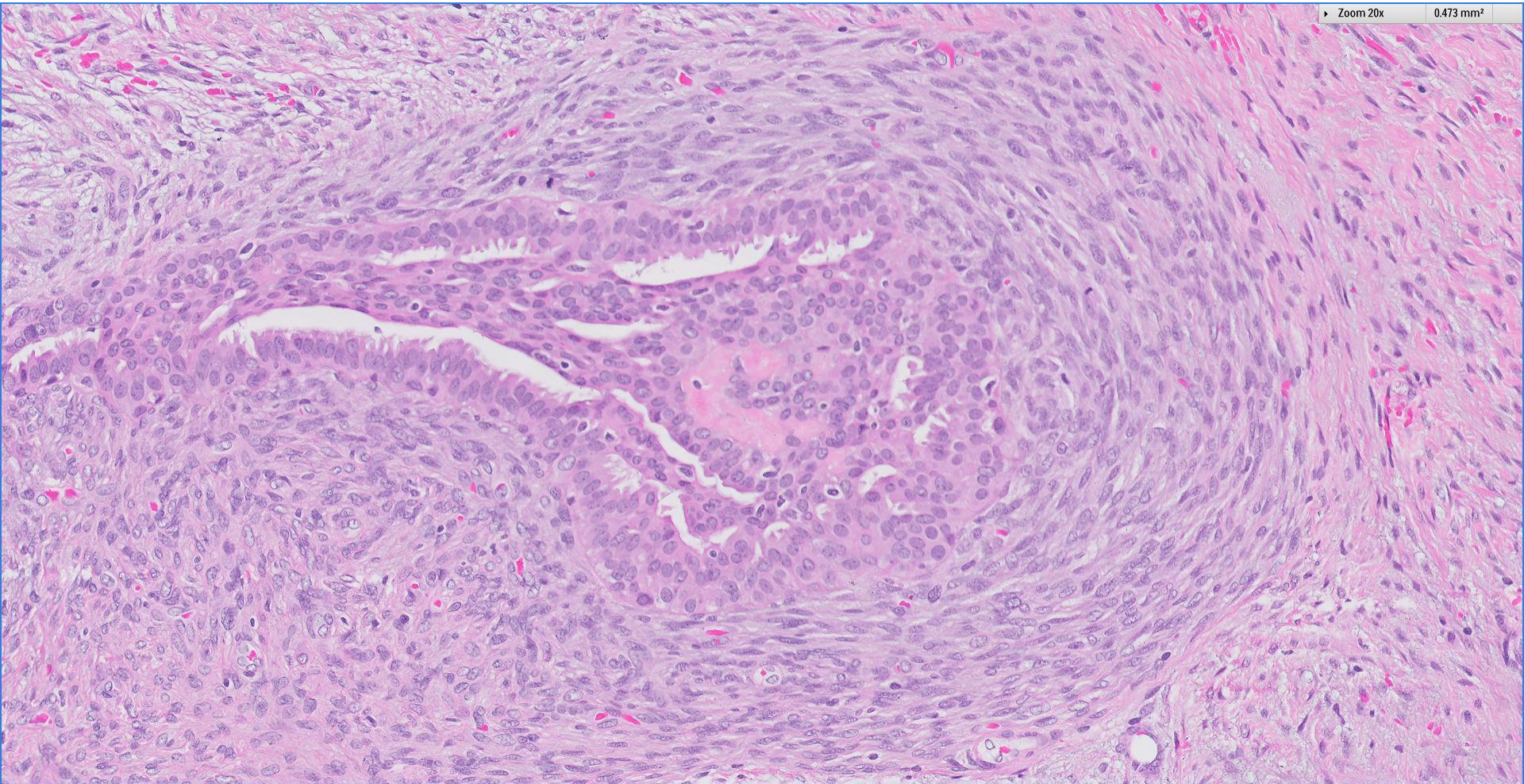
Macroscopic examination showed a 2.2cm nodular solid tan-coloured tumour.



Zoom 5x

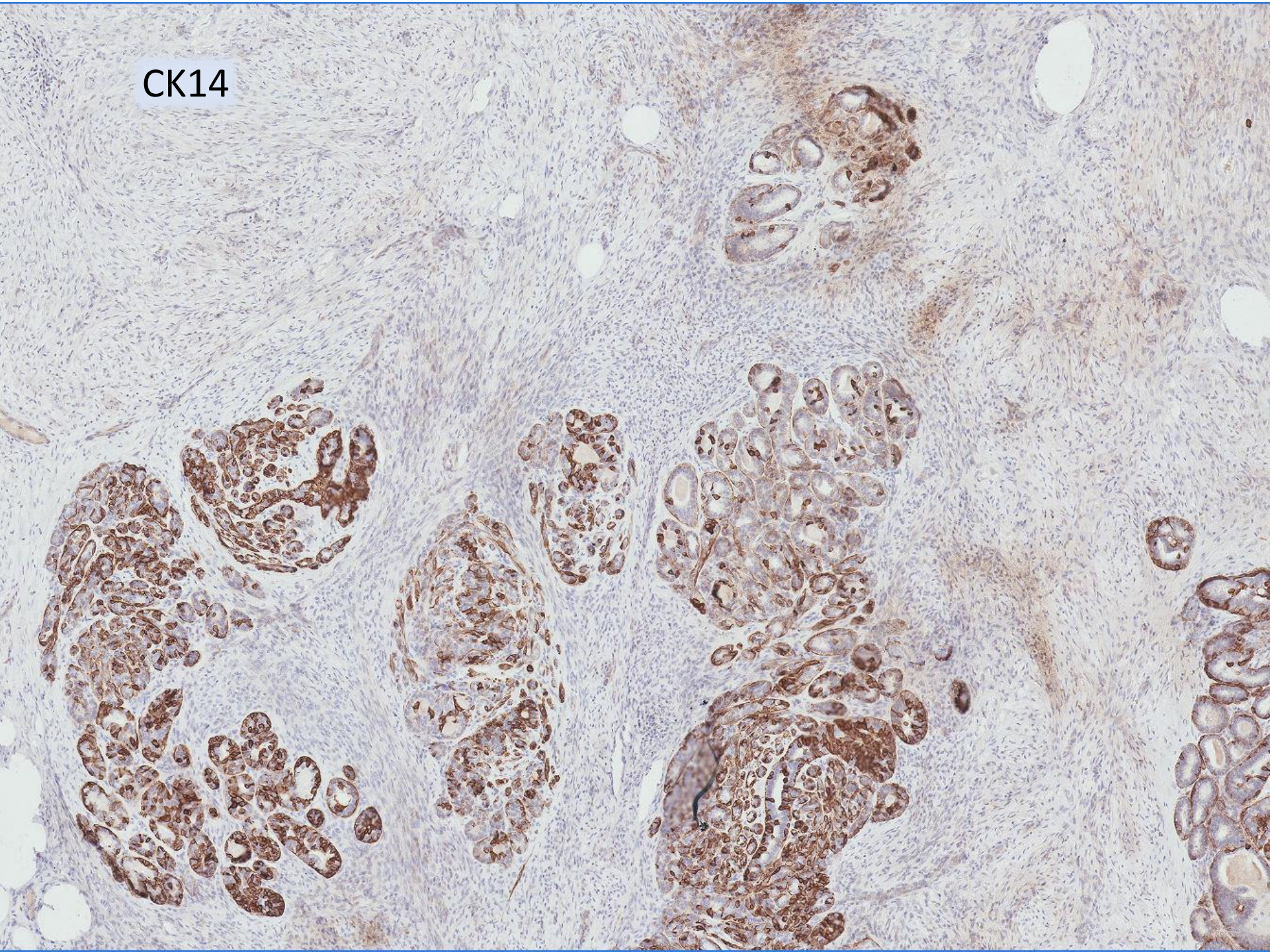
7.572 mm²





Mitotic activity of 5 per 10 high power fields

CK14



Diagnosis

Cellular fibroepithelial neoplasm, with features of a periductal stromal tumour/phyllodes tumour of borderline grade, with osseous metaplasia

Clinical follow-up

Well, without disease, after one year.

(acknowledgment to Dr Karen Yap for follow-up information)

Periductal stromal tumour

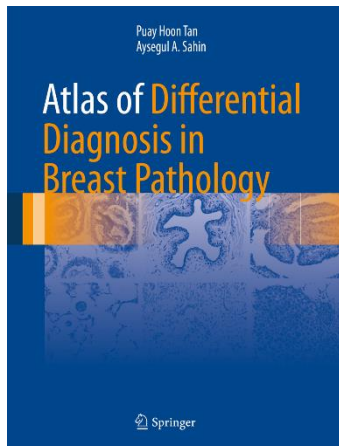
- Previously referred to as periductal stromal sarcoma, the WHO classification of breast tumours in 2012 revised the terminology to a more “neutral” term, periductal stromal “tumour”, avoiding the connotation of malignancy with “sarcoma”, as the biological behaviour of this rarely diagnosed lesion remains uncertain.
- Instead of well-formed stromal fronds capped by benign epithelium, the periductal stromal tumour consists of hypercellular collections of spindle cells present around pre-existing ducts and terminal ductal lobular units.
- Some progress to conventional phyllodes tumours, and they are therefore currently classified under the rubric of phyllodal neoplasms.

p63 may be expressed in the stromal cells of phyllodes tumours

Table 3.4 Distinguishing Features of Sarcomatous Stromal Overgrowth in Malignant Phyllodes Tumour, Spindle Cell Metaplastic Carcinoma, and Primary Breast Sarcoma

Feature	Malignant phyllodes tumour (stromal overgrowth)	Spindle cell metaplastic carcinoma	Primary breast sarcoma
Leaf-like fronds	Present (but may be hard to identify)	Absent	Absent
Peri-epithelial stromal accentuation	Present	Absent	Absent
Carcinoma (in situ and invasive)	Absent	May be present	Absent
Keratins (IHC)	Usually absent, may be focal reactivity	Present, but may be focal	Usually absent
High-molecular-weight keratins	Usually absent, may be focal reactivity	Present, but may be focal	Usually absent
p63, p40	Absent or present	Present, but may be focal	Usually absent

IHC immunohistochemistry



Carcinoma recurrences after breast phyllodes tumours

- Rare reports of anecdotal cases.

Benign phyllodes tumor of the breast recurring as a malignant phyllodes tumor and spindle cell metaplastic carcinoma. Hum Pathol. 2015 Feb;46(2):327-33.

- Two cases at SGH ~
 - *Current BPC2020@21 case 17.*
 - *2nd case of borderline phyllodes tumour recurring as a metaplastic spindle cell breast carcinoma.*

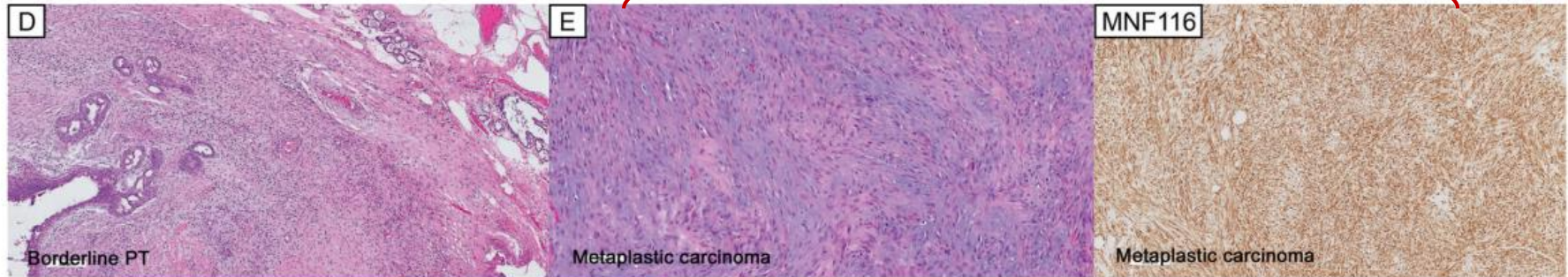


Morphologic and genetic heterogeneity in breast fibroepithelial lesions—a comprehensive mapping study

Benjamin Yongcheng Tan¹ · Nur Diyana Md Nasir¹ · Huan Ying Chang² · Cedric Chuan Young Ng³ · Peiyong Guan^{3,4} · Sanjanaa Nagarajan³ · Vikneswari Rajasegaran³ · Jing Yi Lee³ · Jing Quan Lim⁵ · Aye Aye Thike^{1,2} · Bin Tean Teh^{2,3} · Puay Hoon Tan^{1,2,6}

Borderline phyllodes tumour

Spindle cell metaplastic carcinoma



PT2	Genes														
	MED12	CMTM5	DBF4B	C3orf67	STARD9	PIN1	NF1	GIT2	NOC2L	C1QA	OR1A1	IGF1R	ALKBH8	DAGLA	SLC9C2
D	40.6	30.0	36.4	36.0	46.7	28.2	36.4	28.6	54.8	40.0			36.0	30.9	
E	53.8	54.2	52.0	47.4	33.8	38.6	24.8	33.9			37.9	37.4			26.7

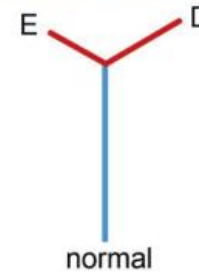
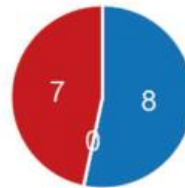


Fig. 1 Case PT2 and mutations. Light microscopy images at low magnification show case PT2's borderline PT (d) diagnosed in 2007, and spindle cell metaplastic carcinoma (e) in 2013. The latter shows diffuse cytoplasmic MNF116 immunoreactivity. The tables reflect their corresponding

mutations and variant allele frequencies (darker shades of red reflect higher VAF, closer to 100%; darker shades of blue reflect lower VAF, closer to 0%). Phylogenetic trees indicate genes mutated in all samples (blue), those mutated in at least two samples (green), and those mutated in one sample (red).

- The spindle cell metaplastic carcinoma (region E) of case PT2 harboured OR1A1 and insulin-like growth factor-1 receptor (IGF1R) mutations, which were absent in a prior borderline PT.
- *OR1A1 belongs to the class A G-protein-coupled receptor. While its function has yet to be fully characterized, other olfactory receptor (OR) genes such as OR2W3 and OR2B6 were found to be correlated to breast cancer progression [48].*
- *Another member of the olfactory subfamily, prostate-specific G-protein-coupled receptor, could also activate NF- κ B through the AKT pathway and induce EMT. Activation of IGF1R could result in downstream activation of two signalling pathways, namely, IRS-1/PI3K/Akt and Ras/Raf/ERK pathways.*
- *Both pathways regulate transcription factors of ZEB, Snail and Twist families, which are key markers in causing EMT.*



- Whether metaplastic carcinoma progresses from a fibroepithelial tumour remains an area for further investigation, as malignancy can occur in the epithelial compartment of these tumours.
- A case study by Muller et al., in which a benign PT first recurred as a malignant PT, and later on as a malignant PT with coexisting spindle cell metaplastic breast carcinoma in the same location over a 7-year period, suggests that this phenomenon may occur.

Carcinoma recurrences after breast phyllodes tumours

- Useful to study the biological profiles of the original tumour with a fibroepithelial (periductal stromal tumour) appearance, and the current spindle cell metaplastic carcinoma.
- Role of the epithelium and epithelial differentiation in fibroepithelial tumours.





Breast
Pathology
Course 2020 @21

PATHOLOGY
118

Thank You



Division of Pathology
Singapore General Hospital

SingHealth DukeNUS
ACADEMIC MEDICAL CENTRE

PATHOLOGY