

Case 18

48 year old female.

Core biopsy of a right breast lump.



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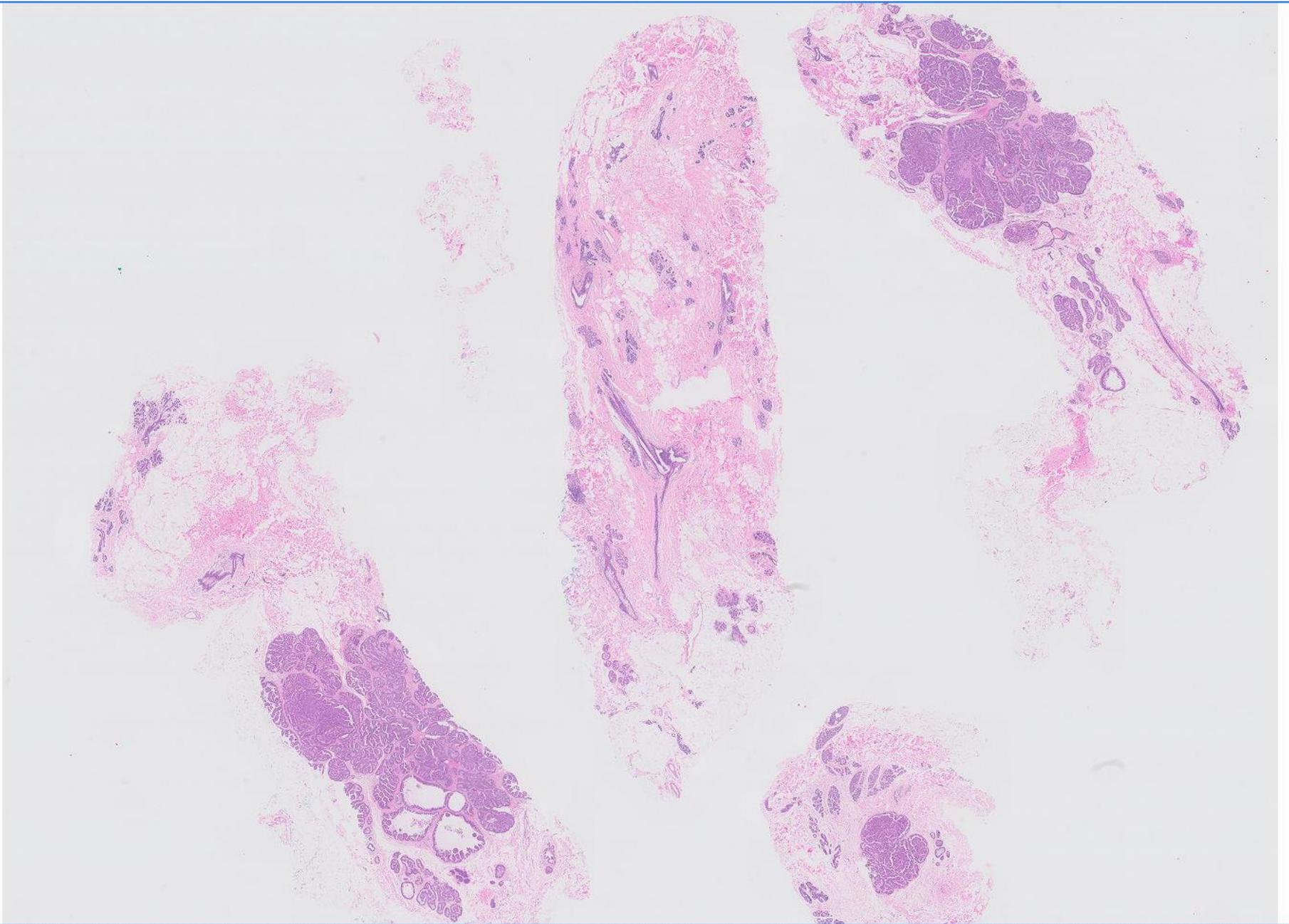
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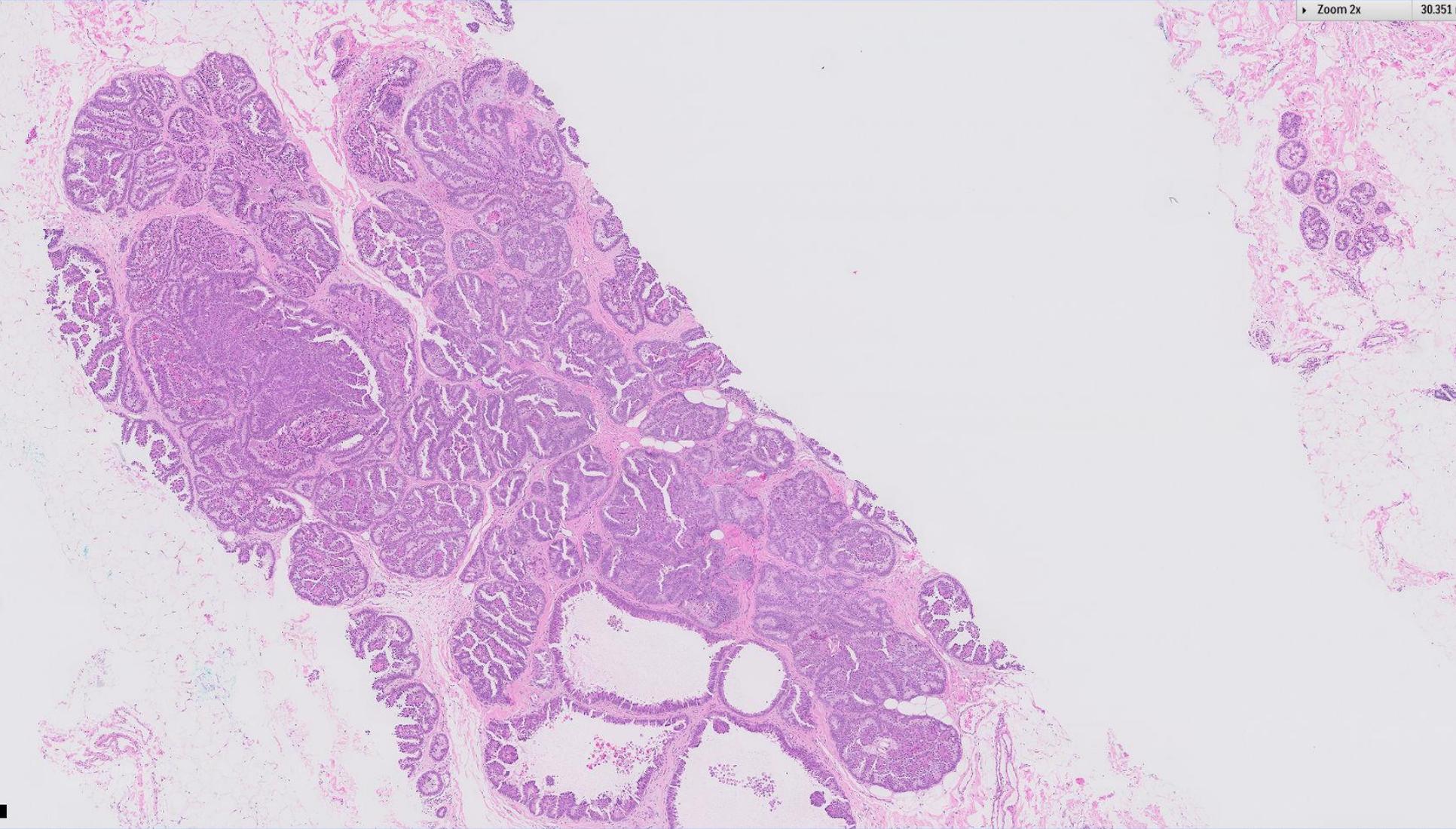
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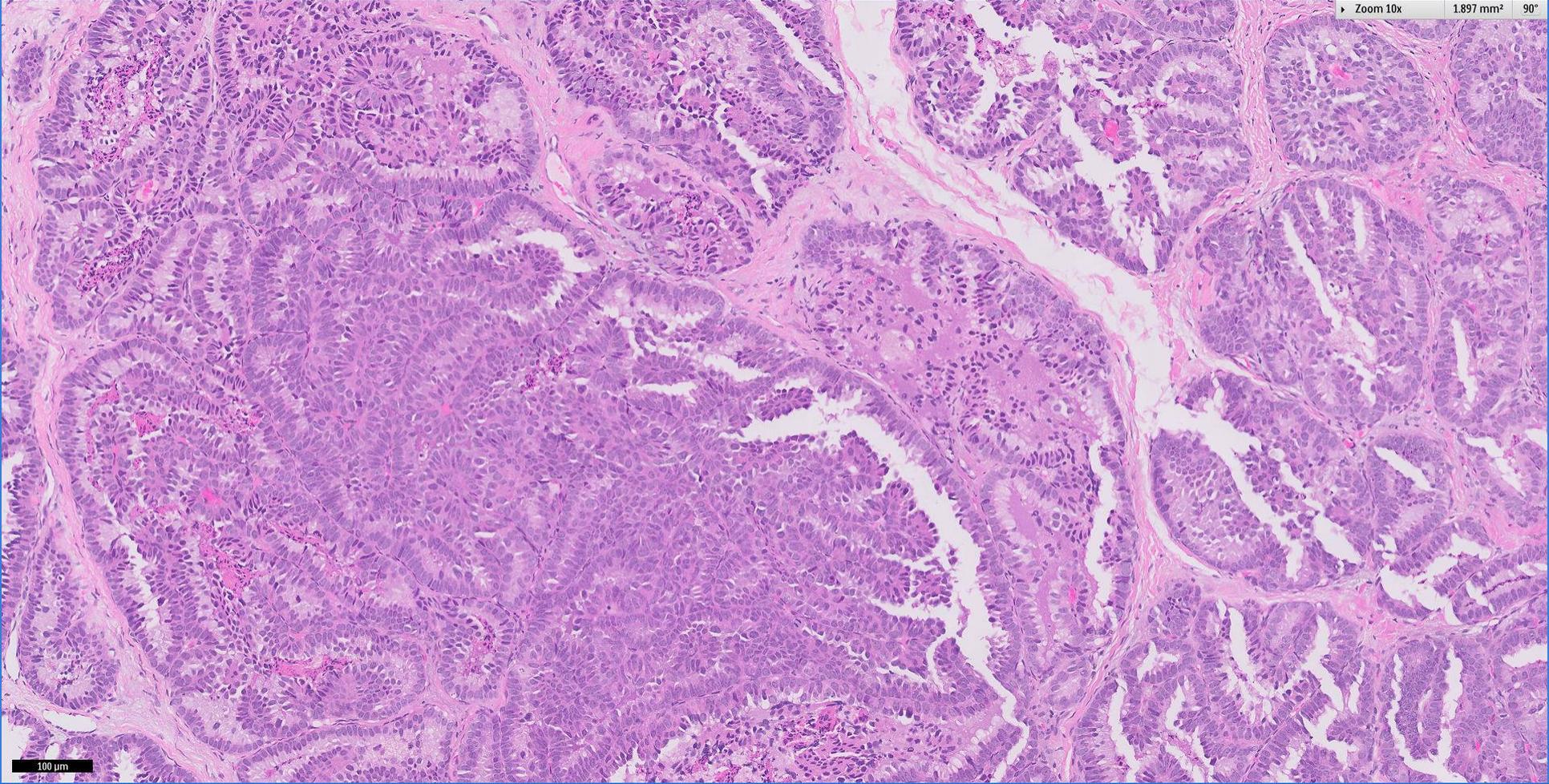
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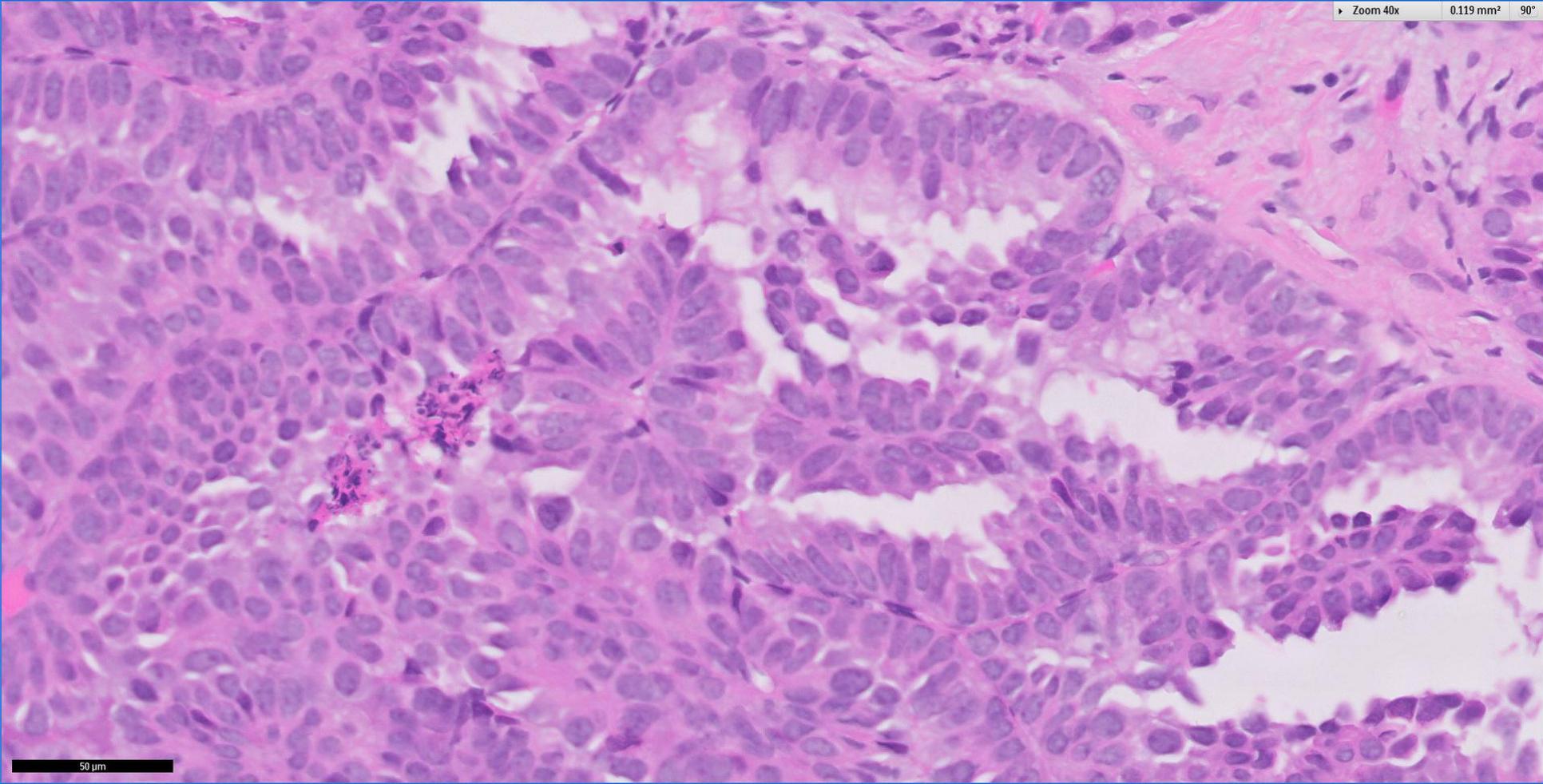




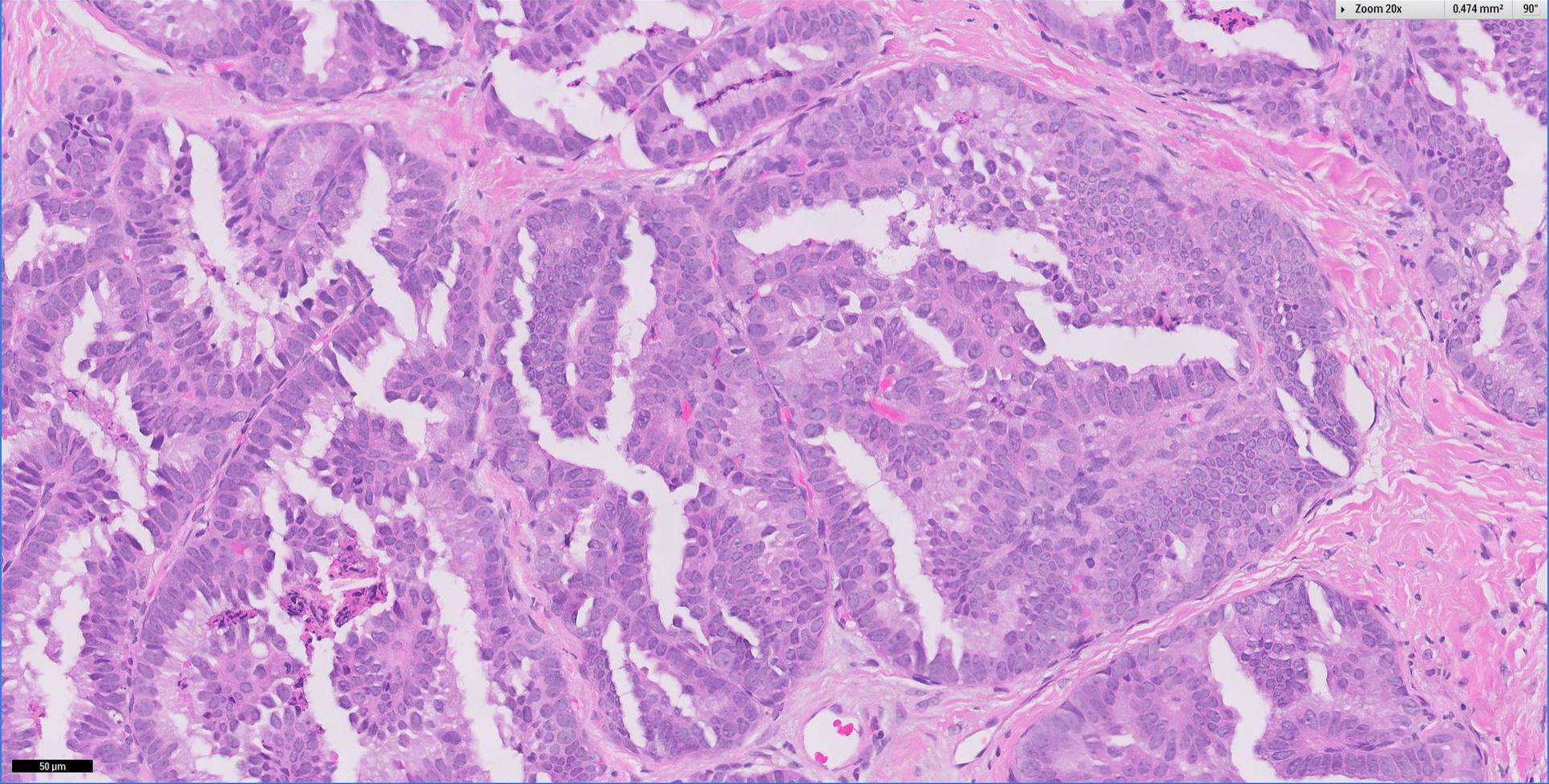




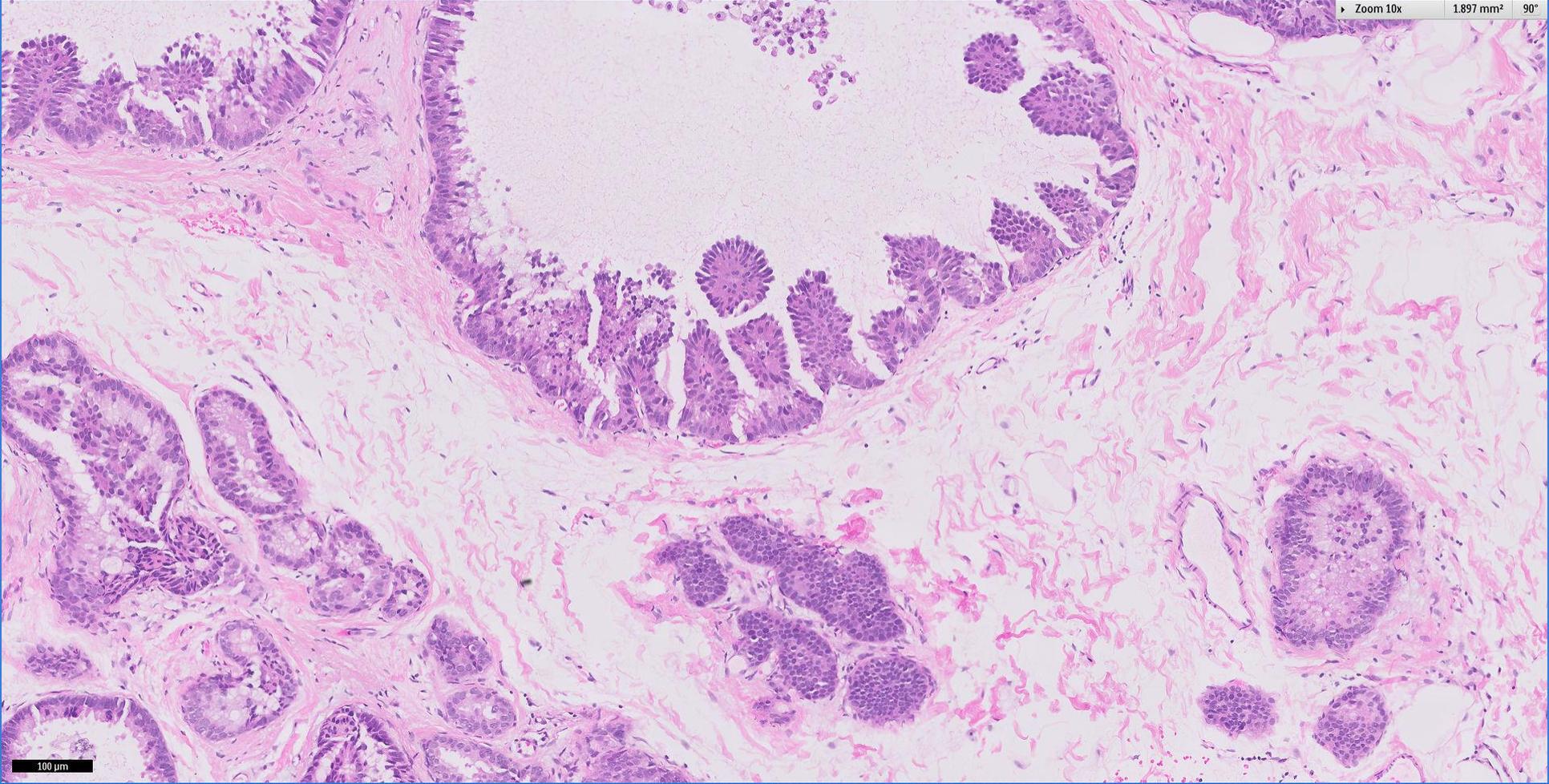




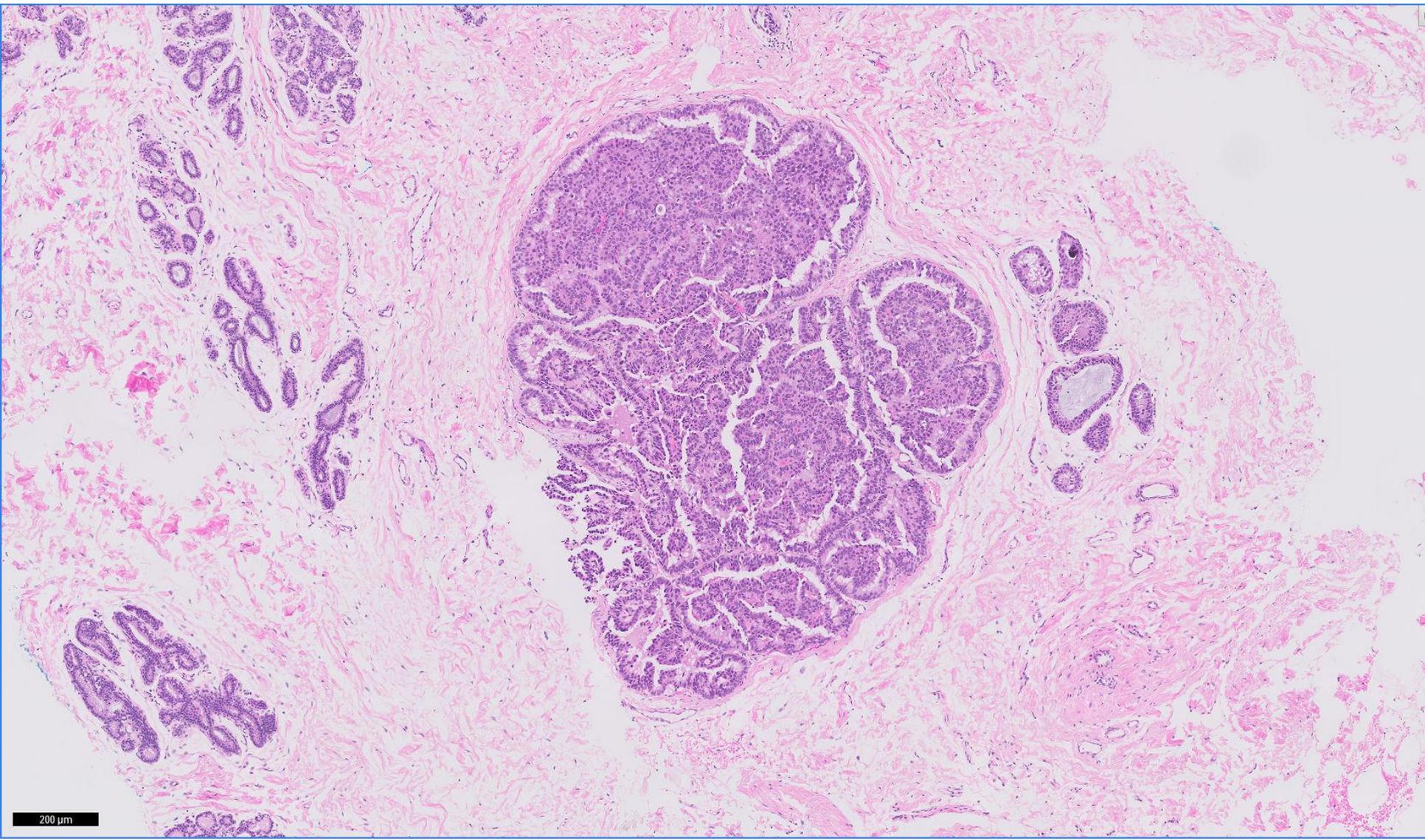
Zoom 20x 0.474 mm² 90°



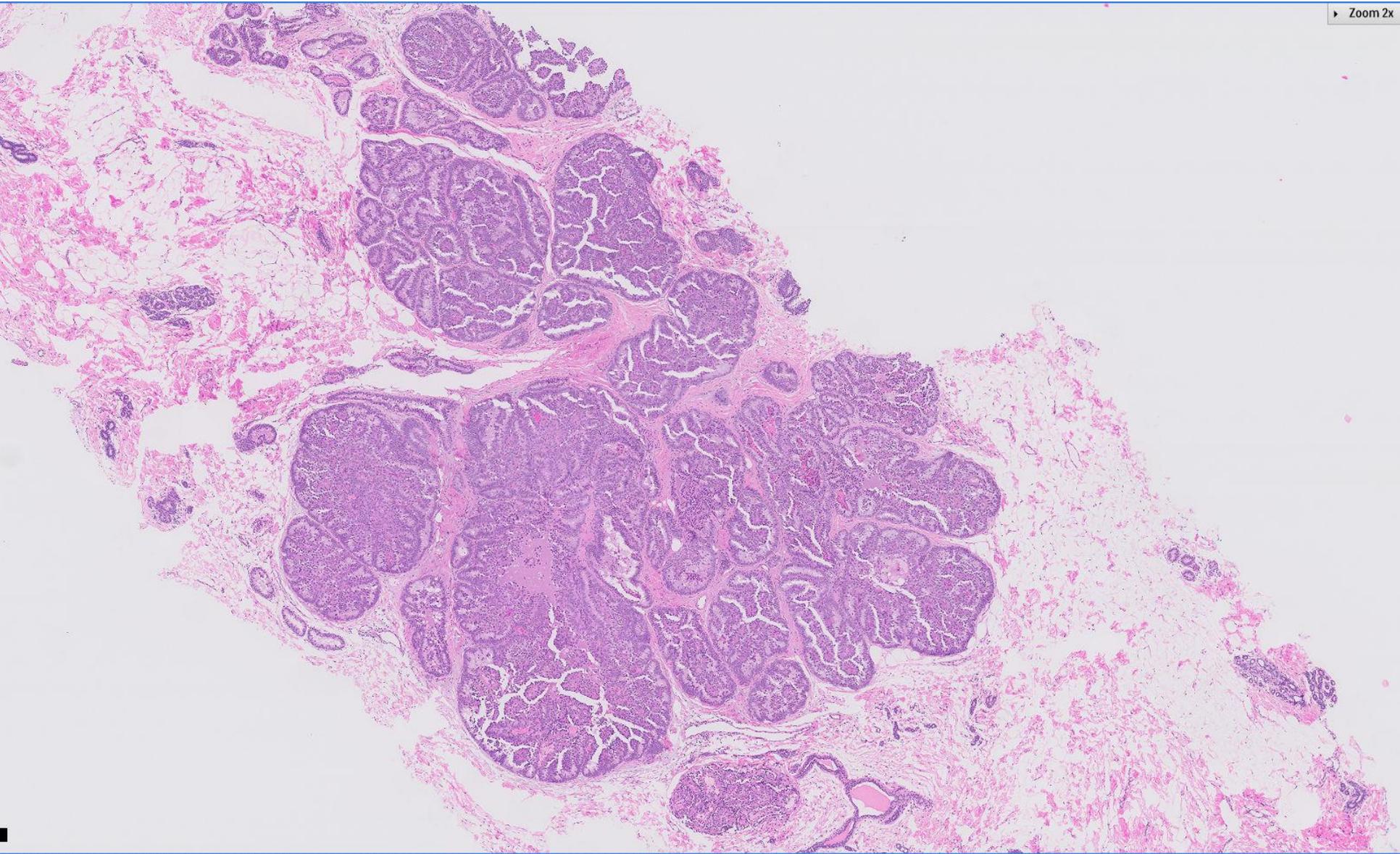
50 µm

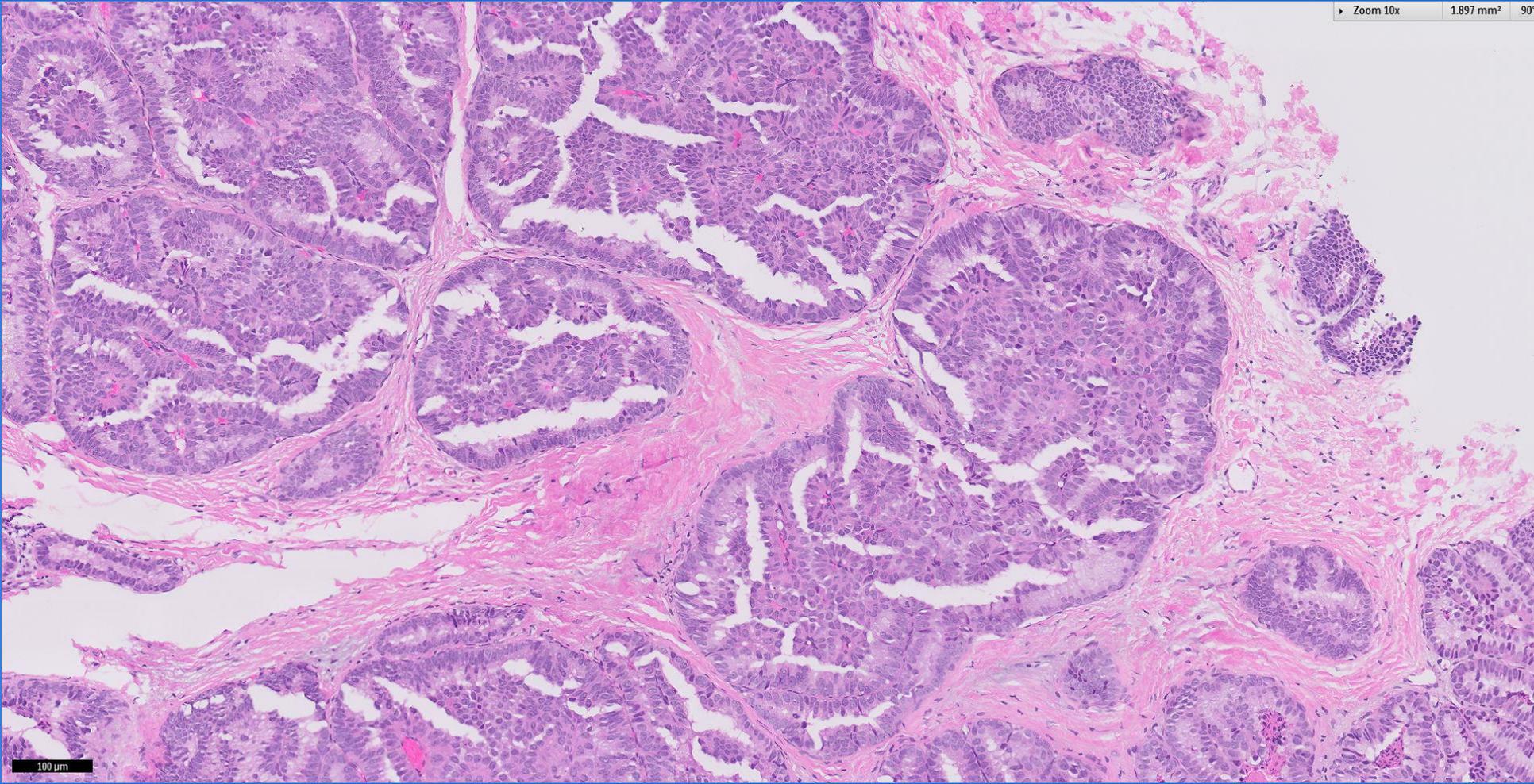


100 µm



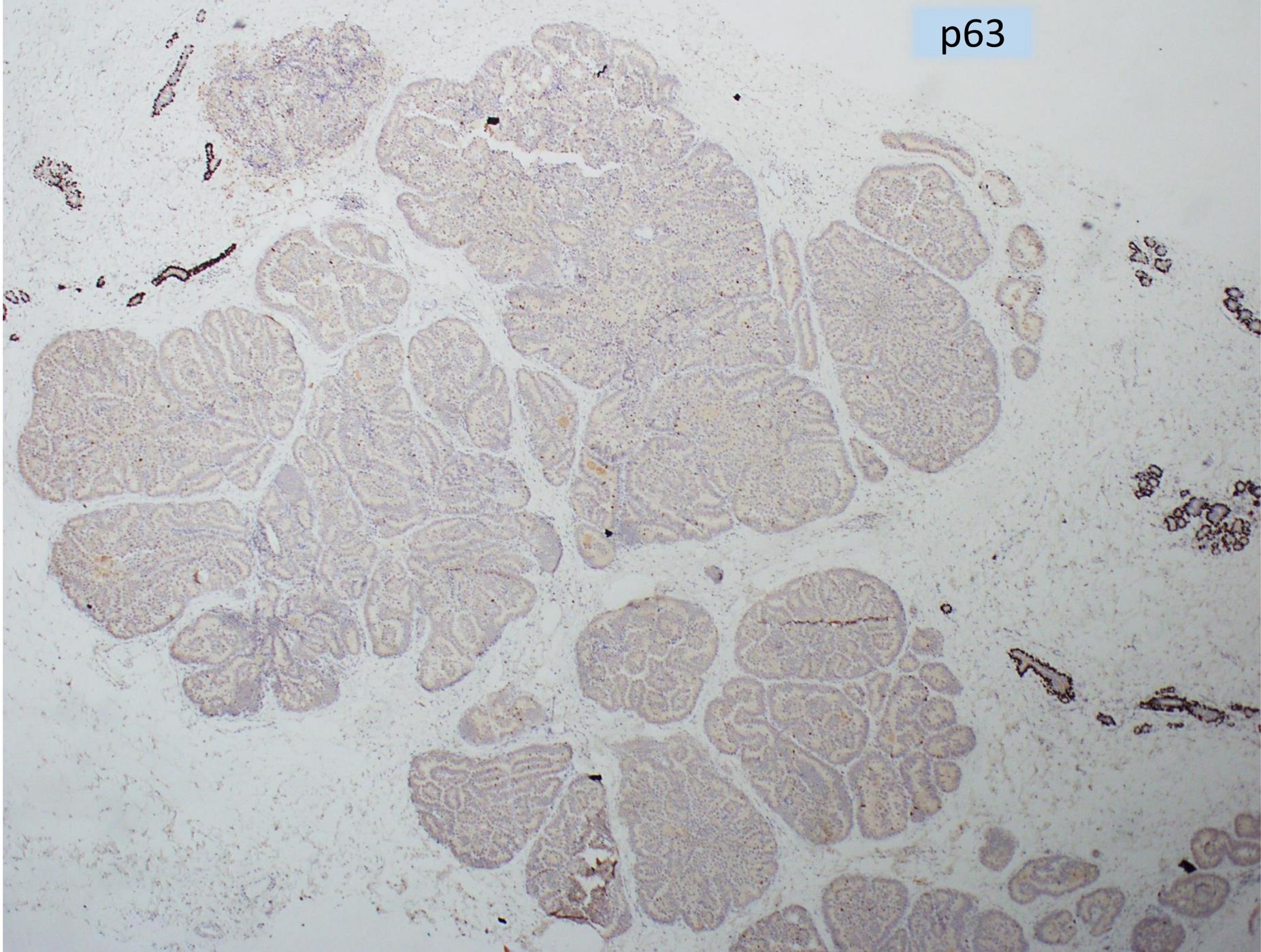
200 μ m



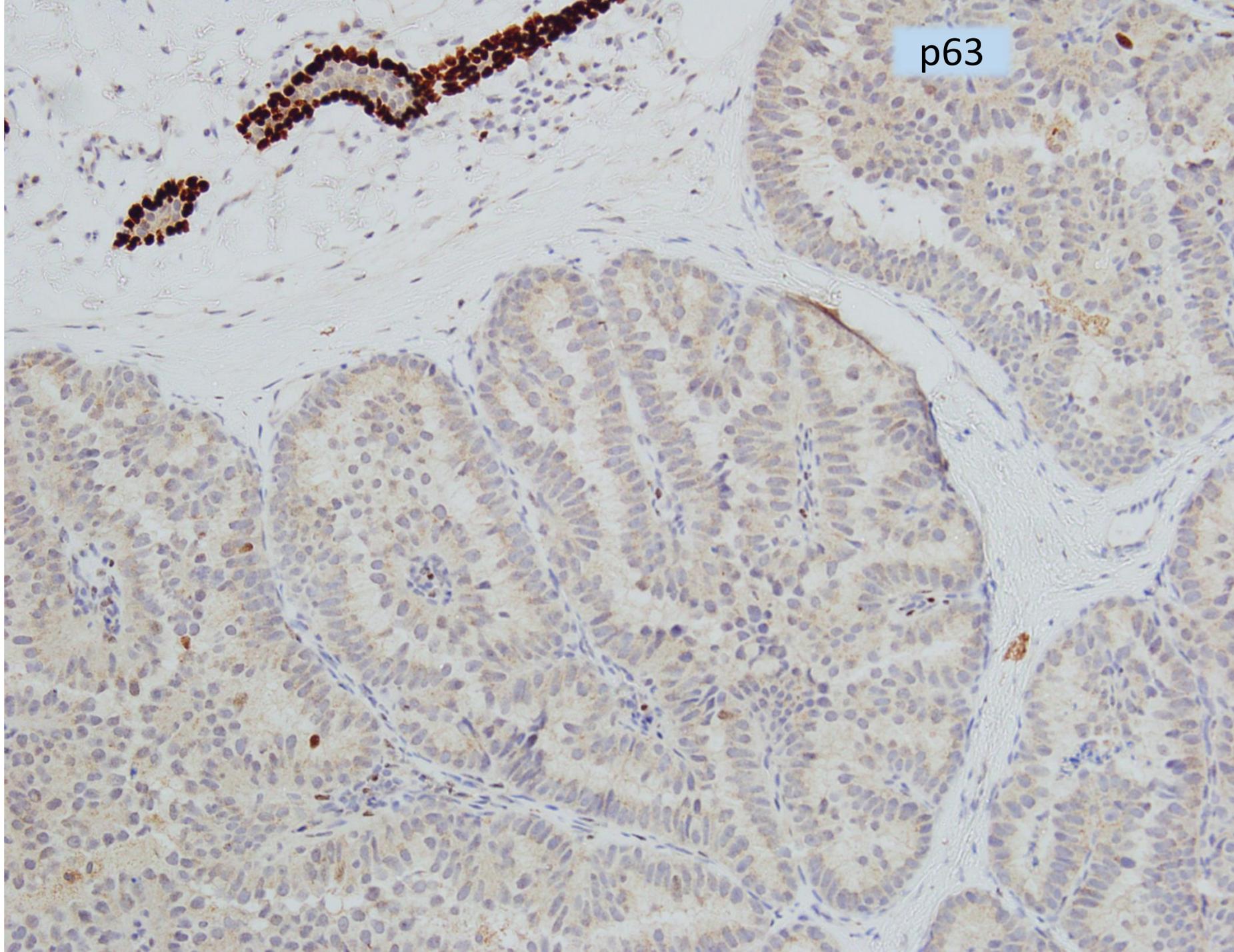


100 µm

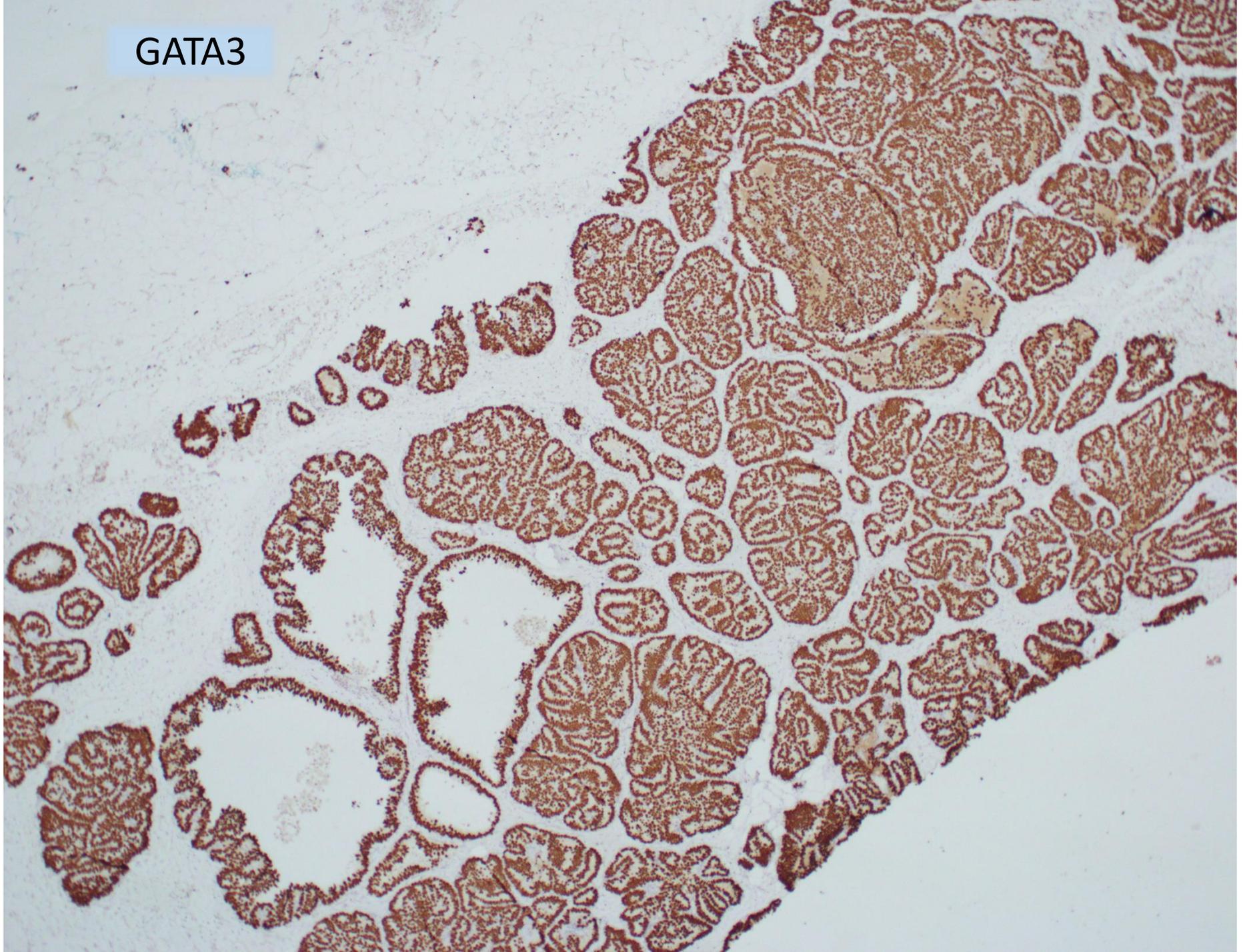
p63



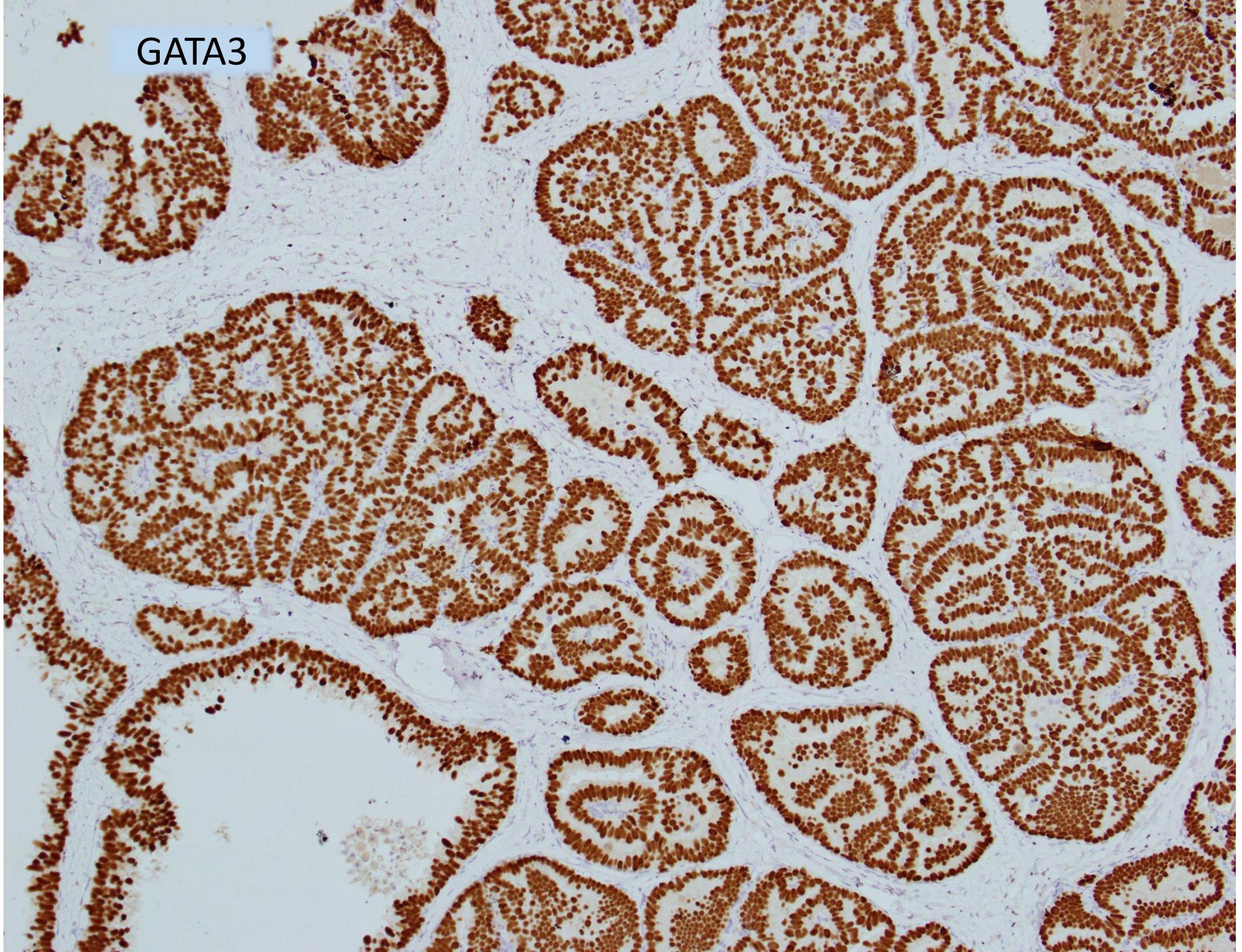
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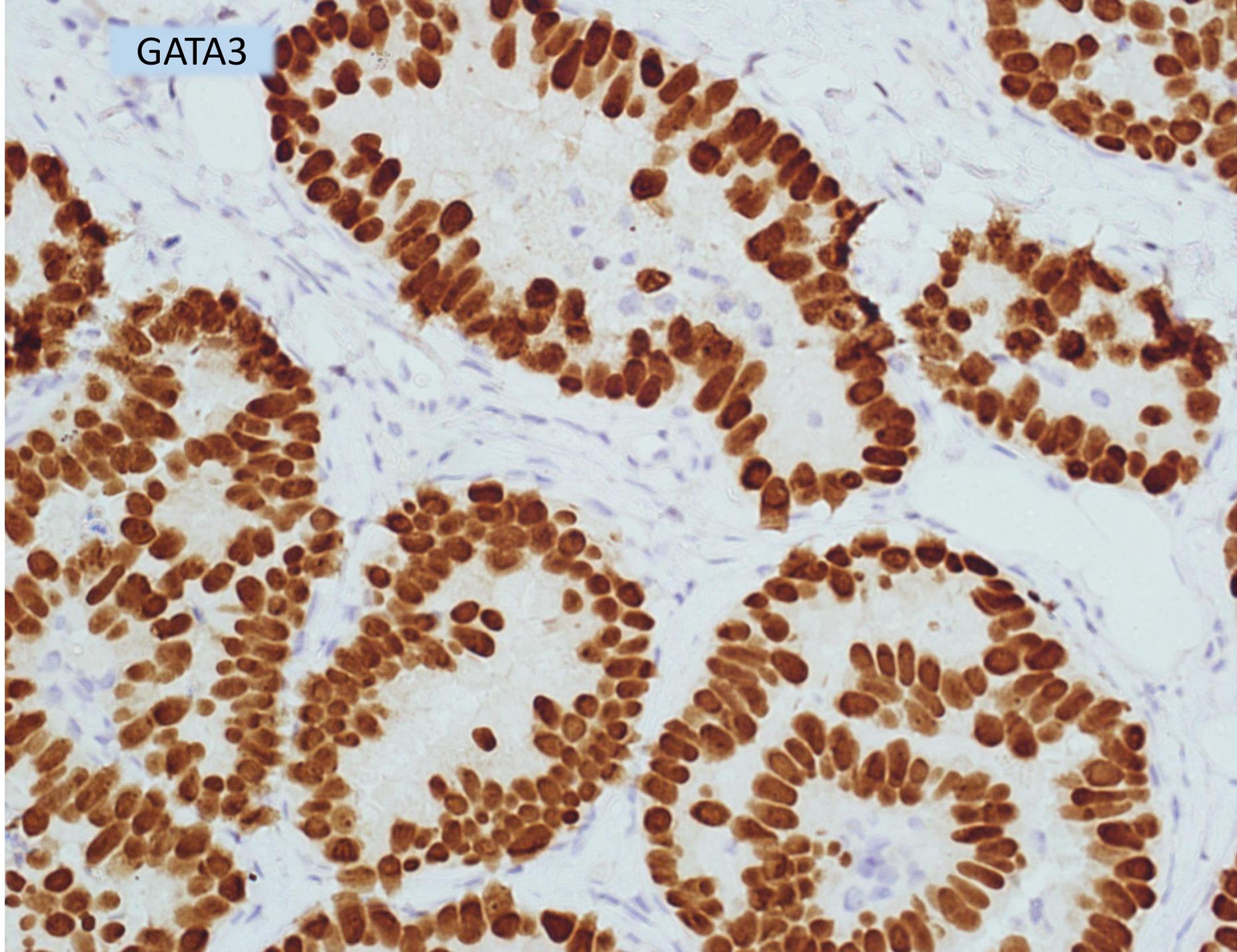
GATA3



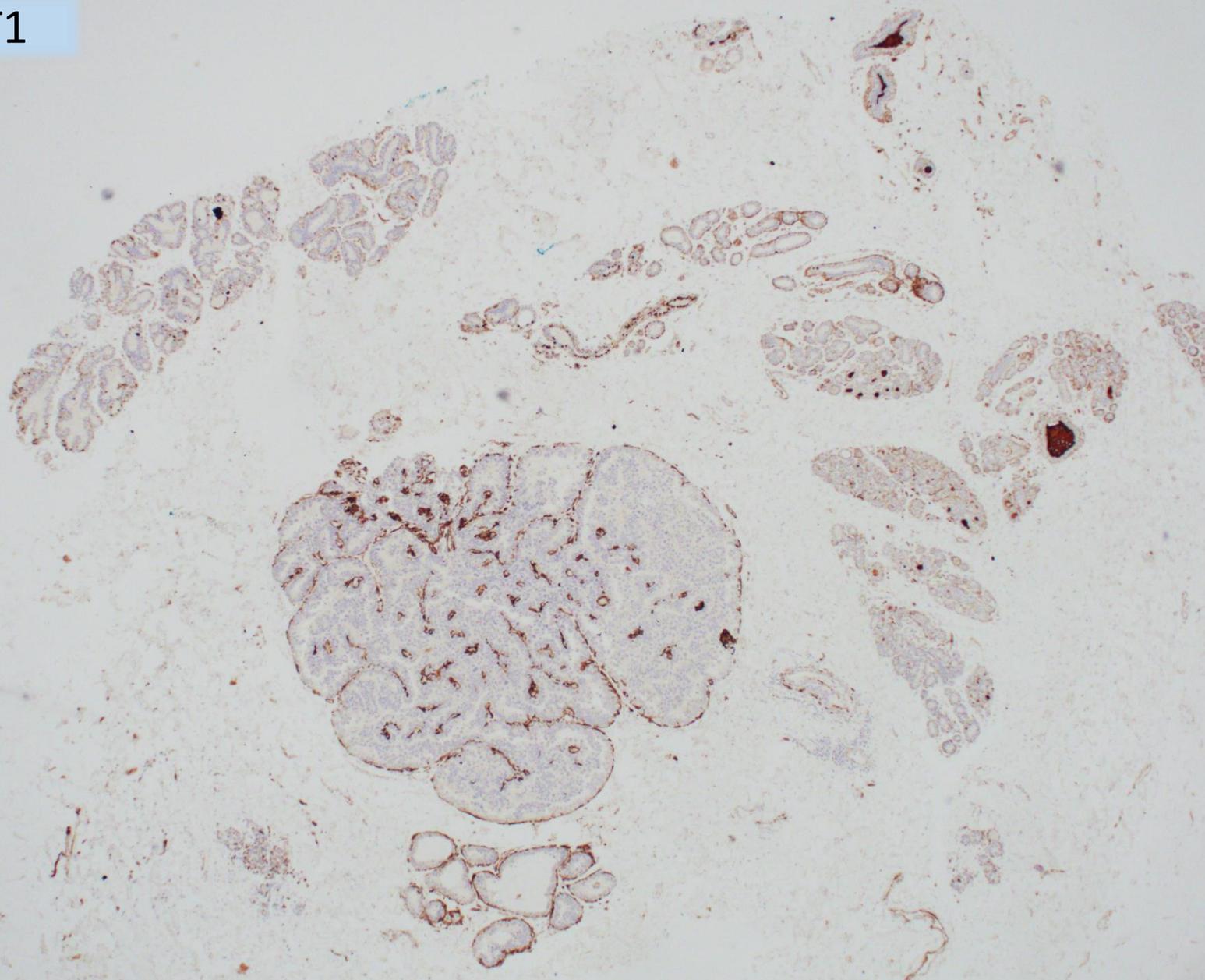
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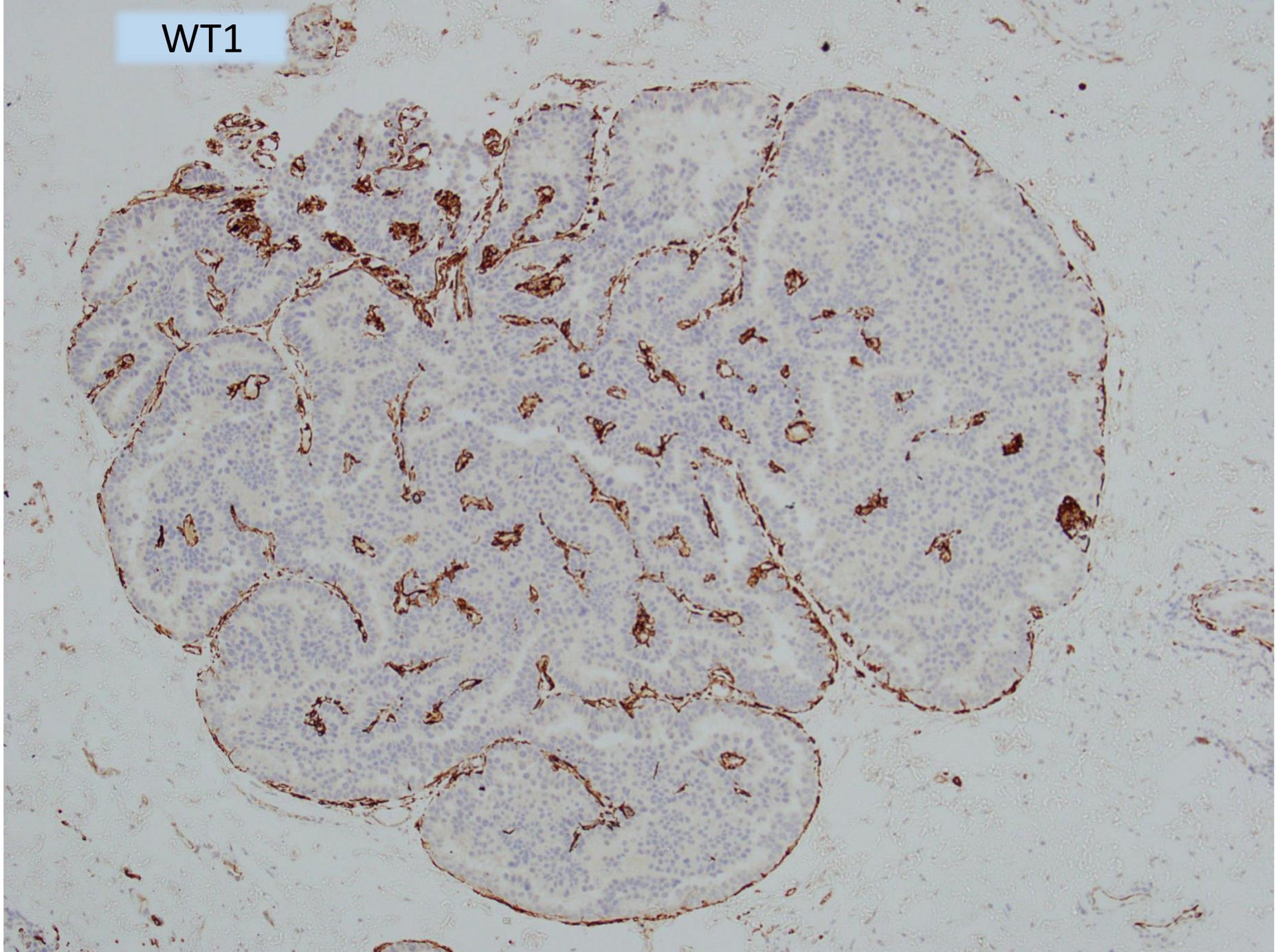
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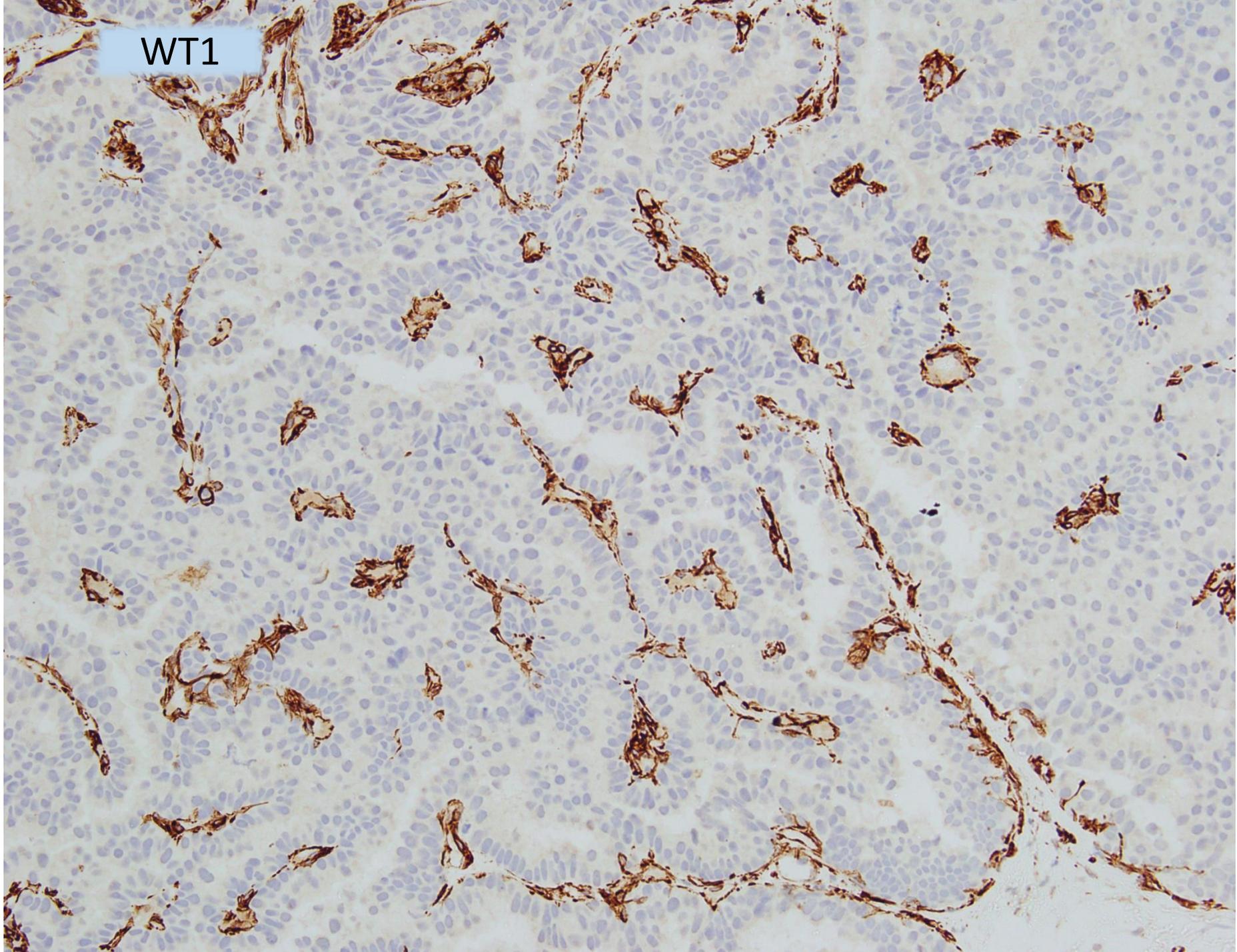
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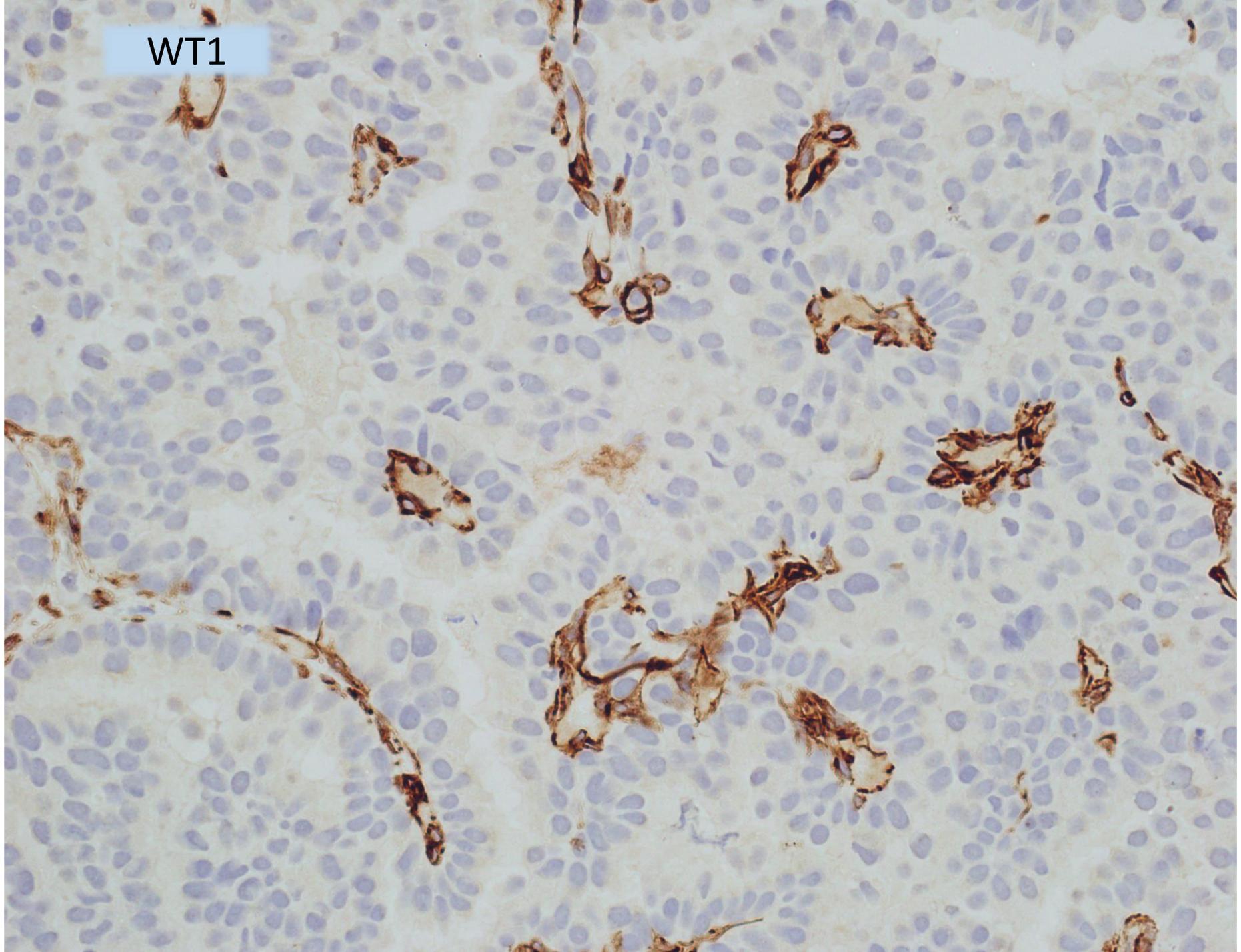
WT1



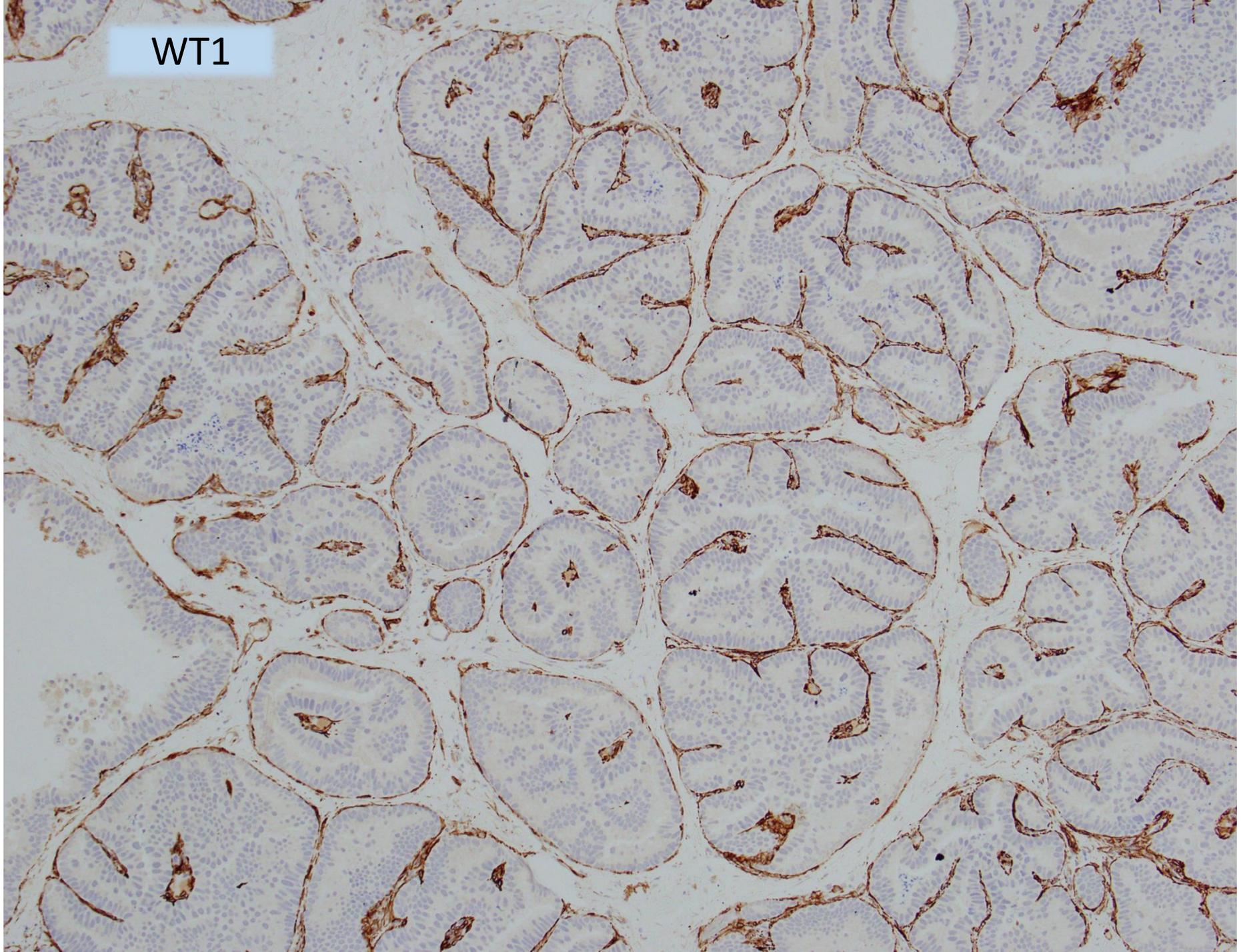
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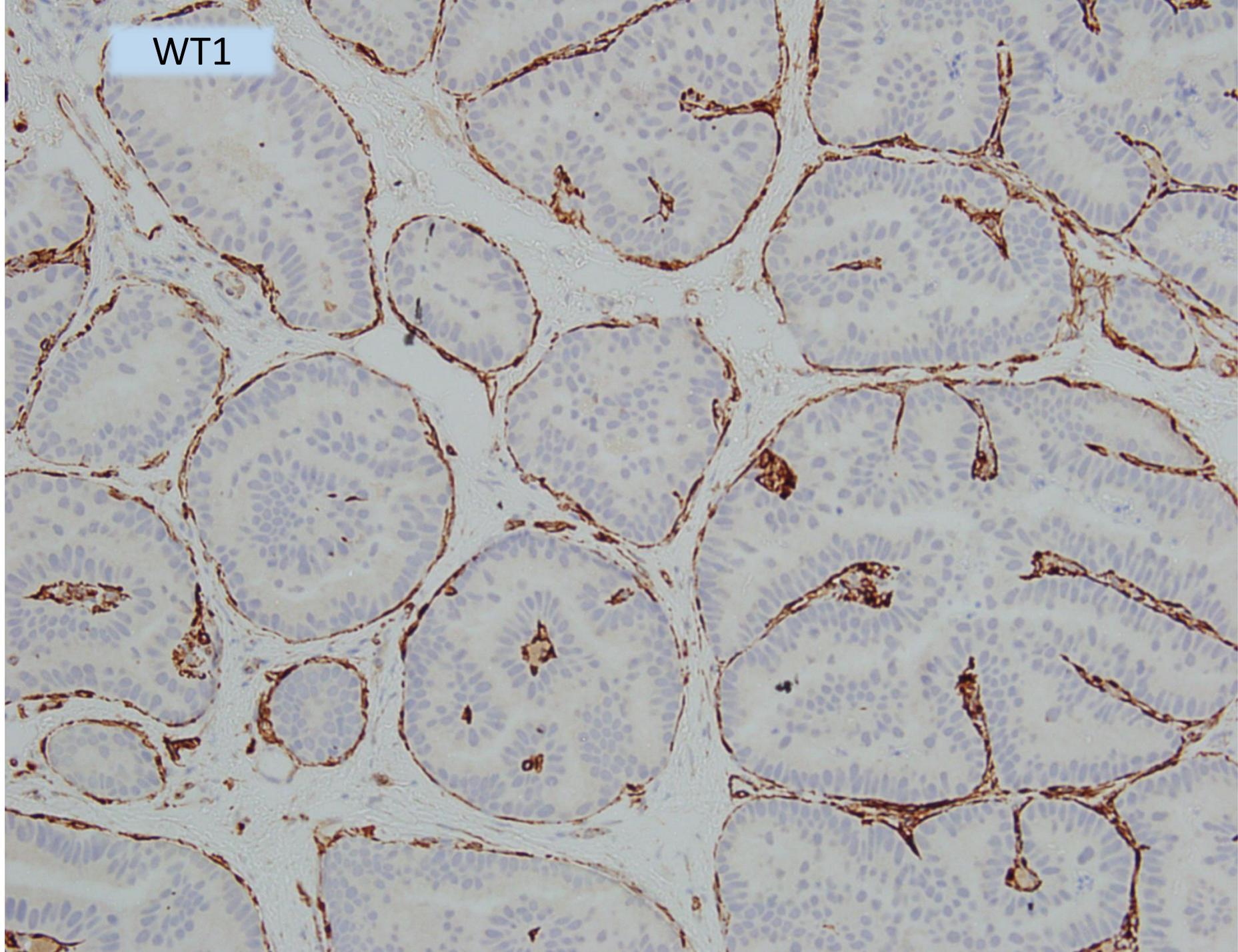
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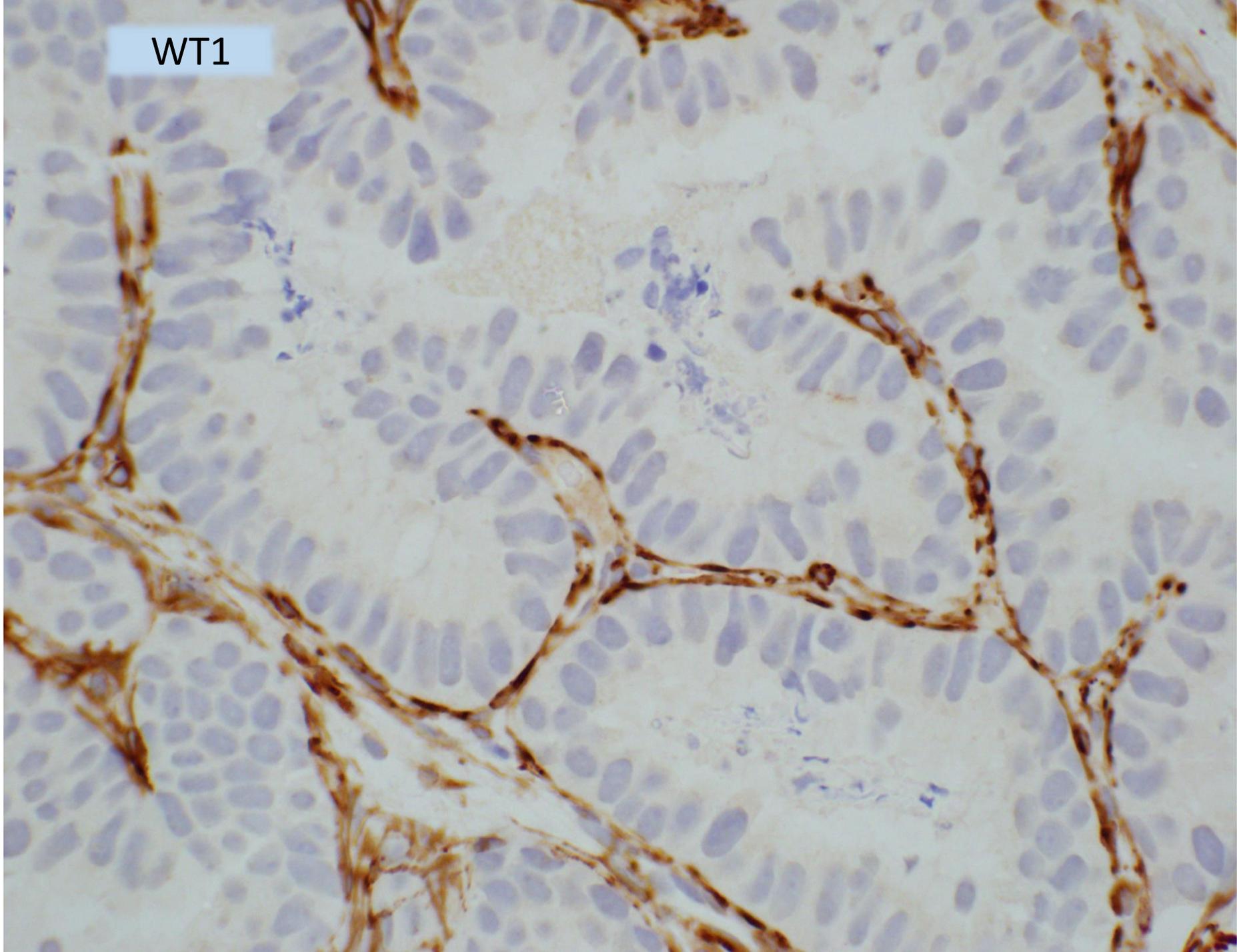
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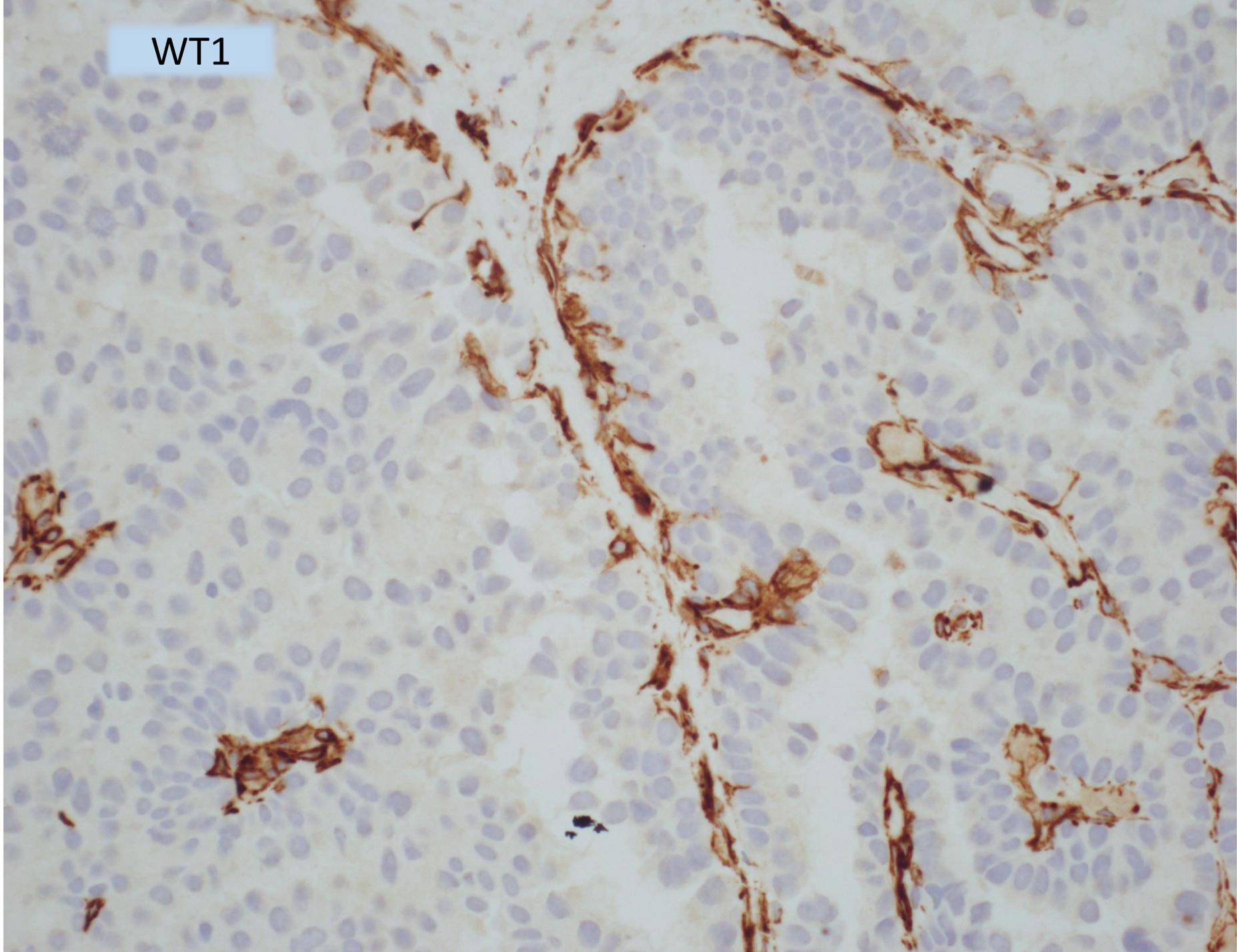
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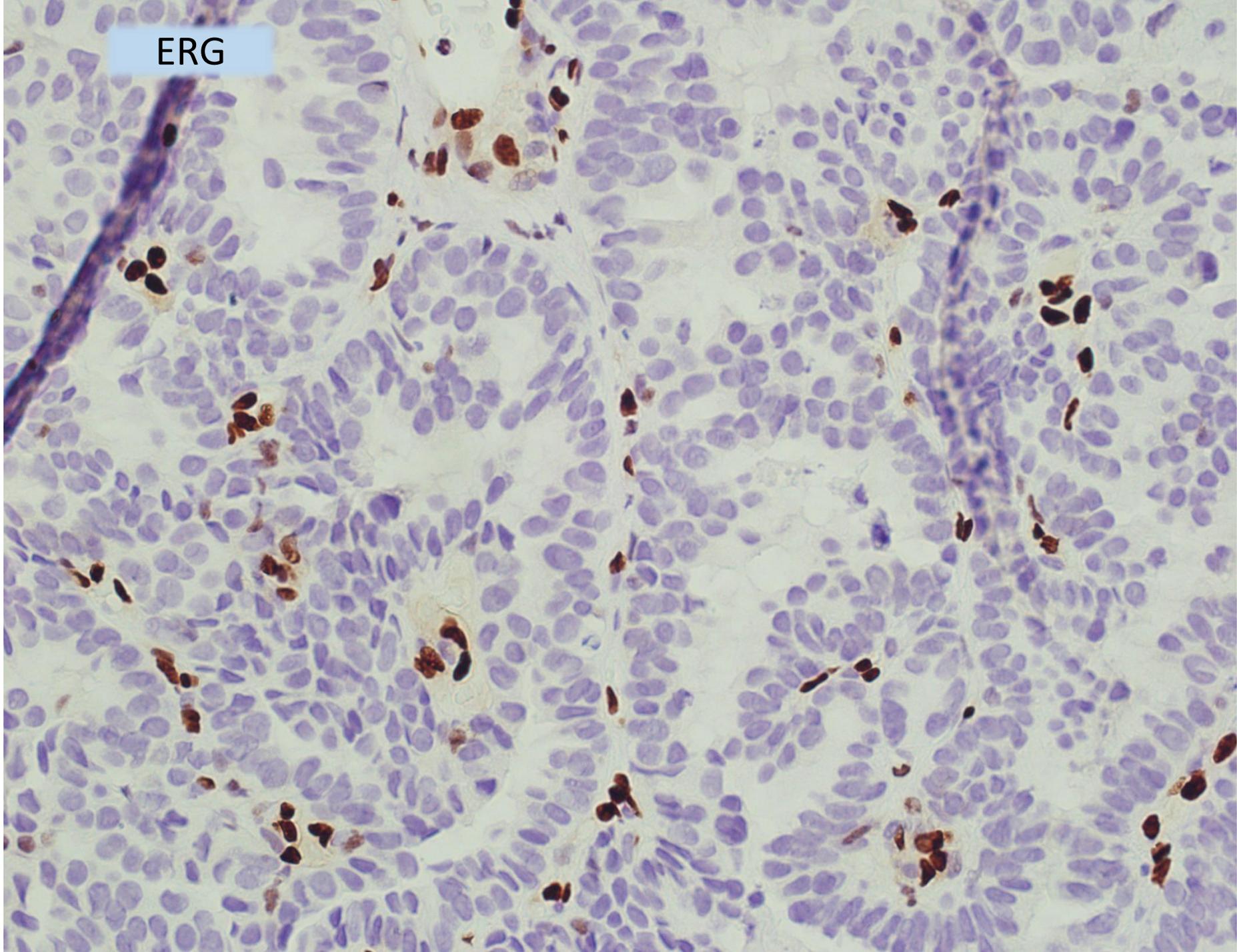
WT1



WT1

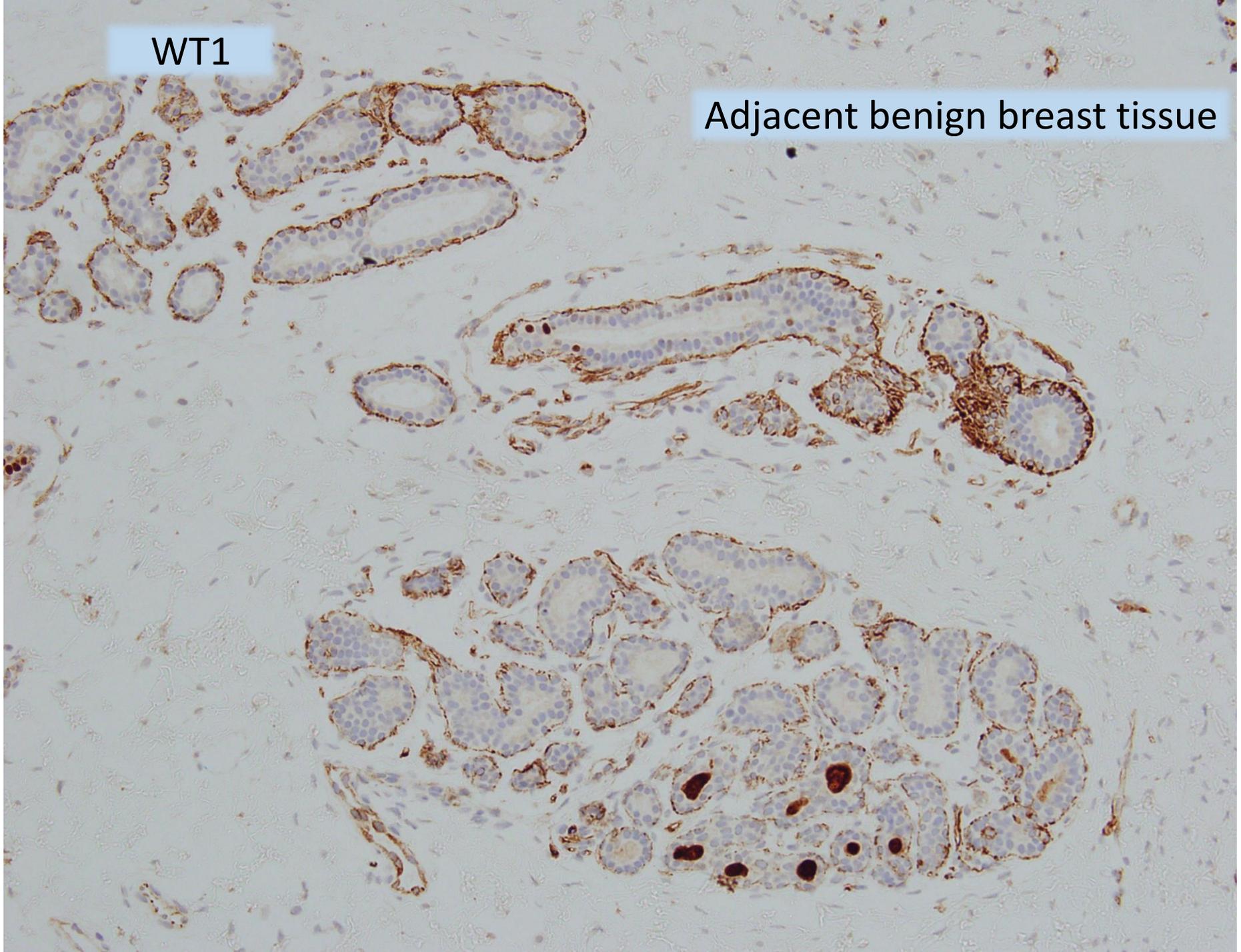


ERG



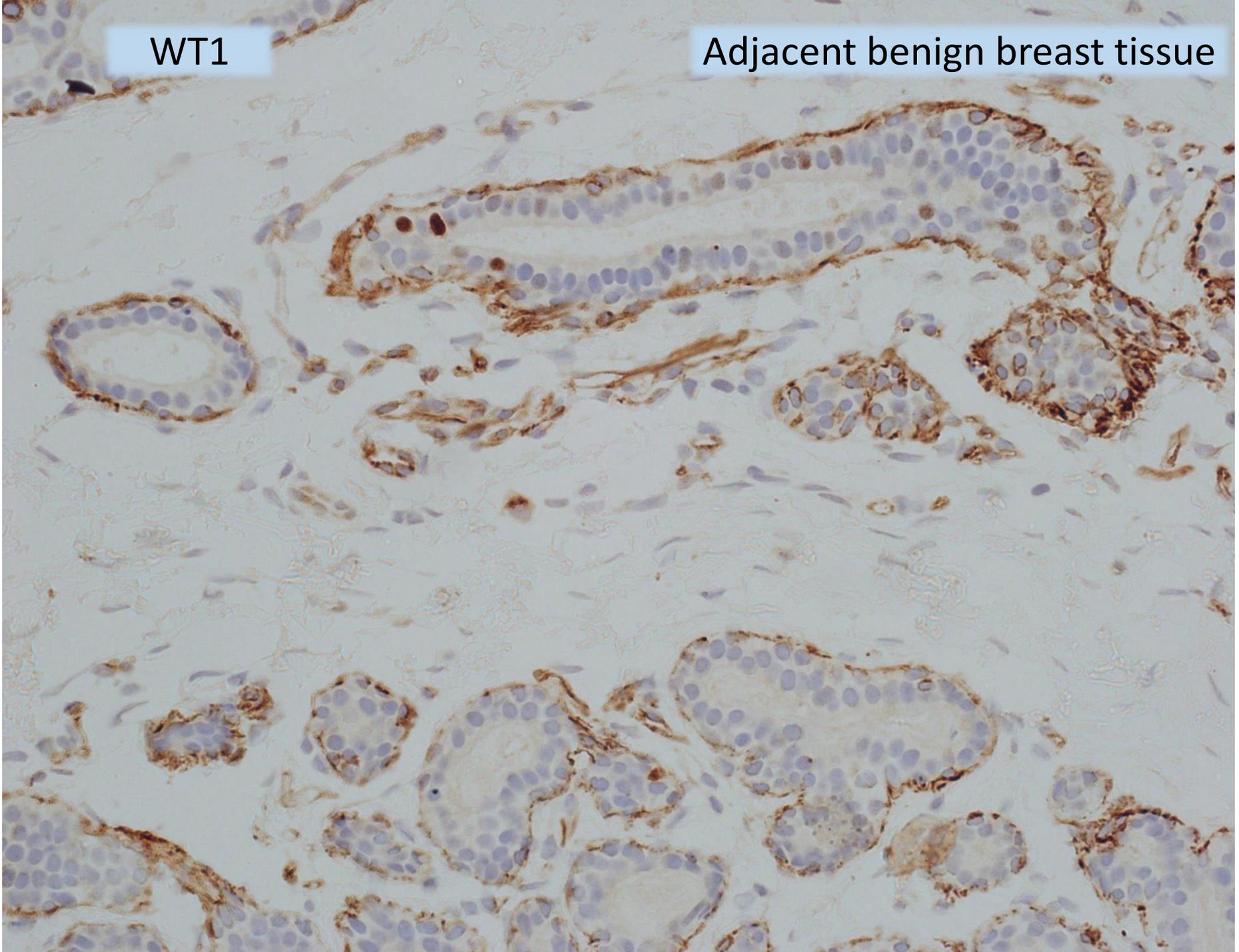
WT1

Adjacent benign breast tissue



WT1

Adjacent benign breast tissue



Diagnosis

Core biopsy, right breast lump ~

Papillary ductal carcinoma in situ, low to intermediate nuclear grade, without necrosis or calcifications.

ER strongly positive, PR weakly positive.



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Papillary ductal carcinoma in situ

- Papillary intraductal carcinoma.
- Non-invasive malignant lesion with papillary architecture arising within the ducts.
- In contrast to an intraductal papilloma with DCIS, papillary DCIS is regarded as a de novo in situ malignant papillary process without a morphologically recognisable benign papilloma in its background.
- It is uncommon in its pure form and is often seen in conjunction with other morphological patterns of DCIS.



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Wilm's tumour protein

- Wilm's tumour protein ~ encoded by the WT1 gene on chromosome 11p.
- Transcription factor comprising 4 zinc finger motifs at the C-terminus, proline/glutamine-rich DNA binding domain at the N-terminus.
- Role in the normal development of the urogenital system.
- Tumour suppressor gene.
- WT1 gene is mutated in a subset of Wilm's tumours.



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Wilm's tumour protein

- A less frequently used myoepithelial marker due to low sensitivity.
- Other myoepithelial markers ~
 - p63, SMMHC, calponin, SMA, S100, CD10, maspin, P-cadherin.
- Marks endothelial cells as well.
- Immunohistochemistry ~
 - Nuclear localization – transcriptional regulation in the nucleus.
 - Cytoplasmic localization – transcriptional regulation in the cytoplasm.

Nakatsuka et al. Modern Pathology (2006) 19, 804–814



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WT1 in breast myoepithelial cells

- Cytoplasmic reactivity.
- Few studies describing the use of WT1 in breast myoepithelial cells.



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The logo for the International Academy of Pathology, Singapore Division, featuring the letters 'IAP' in a bold, blue, sans-serif font.

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Cancer Biomark. 2009;5(3):109-16. doi: 10.3233/CBM-2009-0595.

Dual usages of single Wilms' tumor 1 immunohistochemistry in evaluation of breast tumors: a preliminary study of 30 cases.

Li JH(1), Man YG. (1)Center of Anatomy and Functional Morphology, Mount Sinai School of Medicine, New York, NY, USA.

Our previous studies revealed that **Wilms' tumor 1 (WT-1) protein was highly expressed in breast myoepithelial (ME) and endothelial cells**. As the human breast tissue is rich in ME cells and blood vessels, our current study intended to assess whether WT-1 immunohistochemistry may have dual usages in evaluation of the ME cells and micro-vessel density. Consecutive sections were prepared from breast tumors with co-existing normal, hyperplastic, and neoplastic components. Consecutive sections were immunostained for WT-1 and a panel of ME and endothelial cell markers. From each case, 4-5 randomly selected duct clusters were photographed, and the percentages of positive cells for these molecules were compared. Similar to ME cell marker CD10 and smooth muscle actin (SMA), WT-1 expression was preferentially seen in ME cells, and over 90% of WT-1 positive ME cells were immunoreactive to CD10 and SMA. Distinct WT-1 expression was also seen in endothelial cells, and over 90% of WT-1 positive endothelial cells were positive for blood vessel specific markers. With tumor progression, the percentage and intensity of WT-1 positivity decreased in ME cells, whereas increased in endothelial cells. These findings suggest that WT-1 immunohistochemistry may be used to assess both the ME cells and micro-vessel density.

Research Paper

Aberrant p63 and WT-1 expression in myoepithelial cells of pregnancy-associated breast cancer: implications for tumor aggressiveness and invasiveness

Zheli Xu¹, Wan Wang¹, Chu-Xia Deng², Yan-gao Man³ ✉



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Breast Cancer Res. 2003; 5(5): R151–R156.

PMCID: PMC314436

Published online 2003 Jul 24. doi: [10.1186/bcr635](https://doi.org/10.1186/bcr635)

A subset of morphologically distinct mammary myoepithelial cells lacks corresponding immunophenotypic markers

Roy R Zhang,¹ Yan-Gao Man,^{✉1} Russell Vang,¹ Jeffrey S Saenger,¹ Ross Barner,¹ Darren T Wheeler,¹ Chang Y Liang,¹ Tuyethoa N Vinh,¹ and Gary L Brattbauer¹

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WT1 used as a myoepithelial marker

WT1 immunoreactivity in breast carcinoma

- WT1 expression is reported in approximately 10% of carcinomas that show mixed micropapillary and mucinous morphology, mostly weak to moderate intensity.
- Not expressed in non-mucinous subtypes.

Mod Pathol. 2008 Oct;21(10):1217-23



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