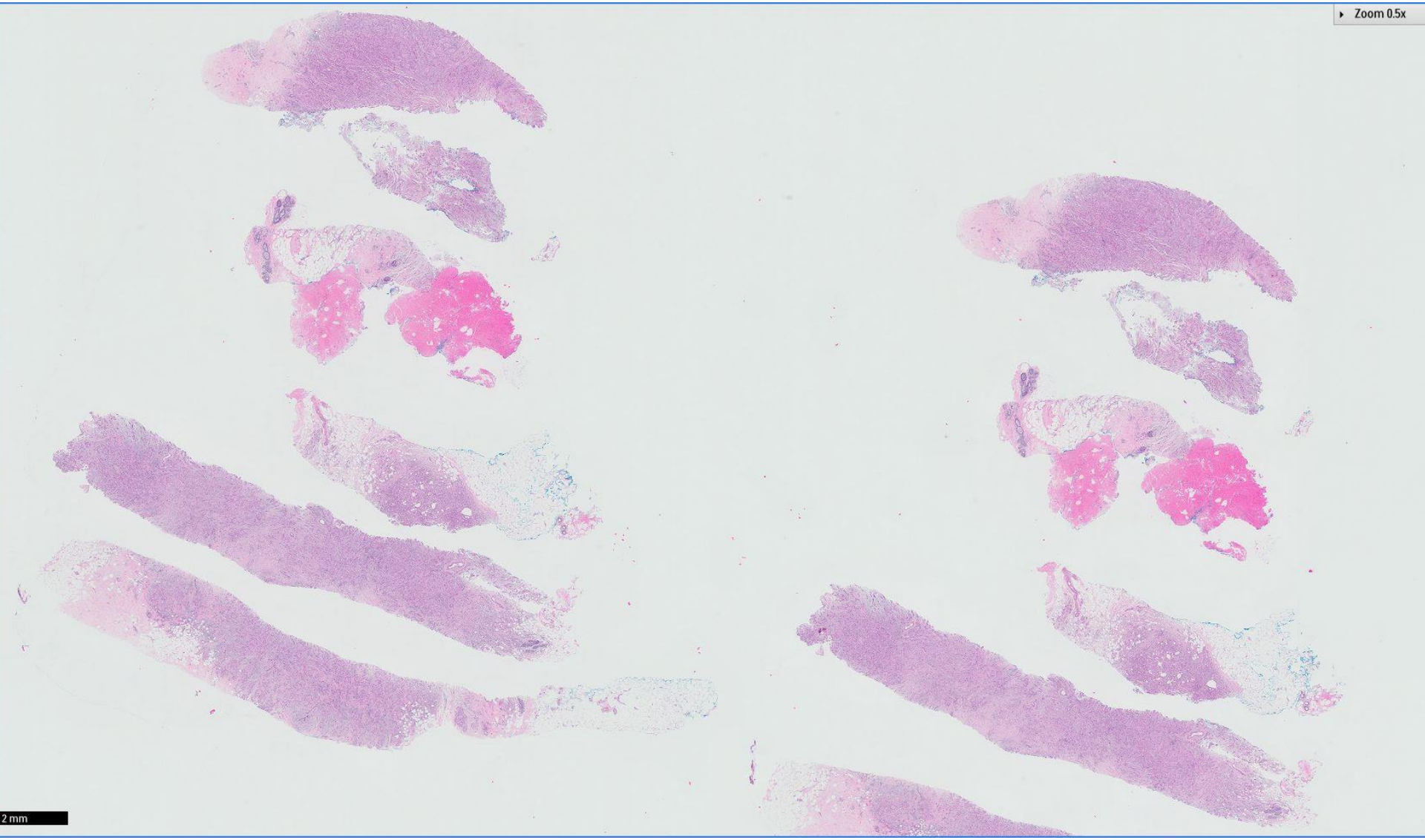
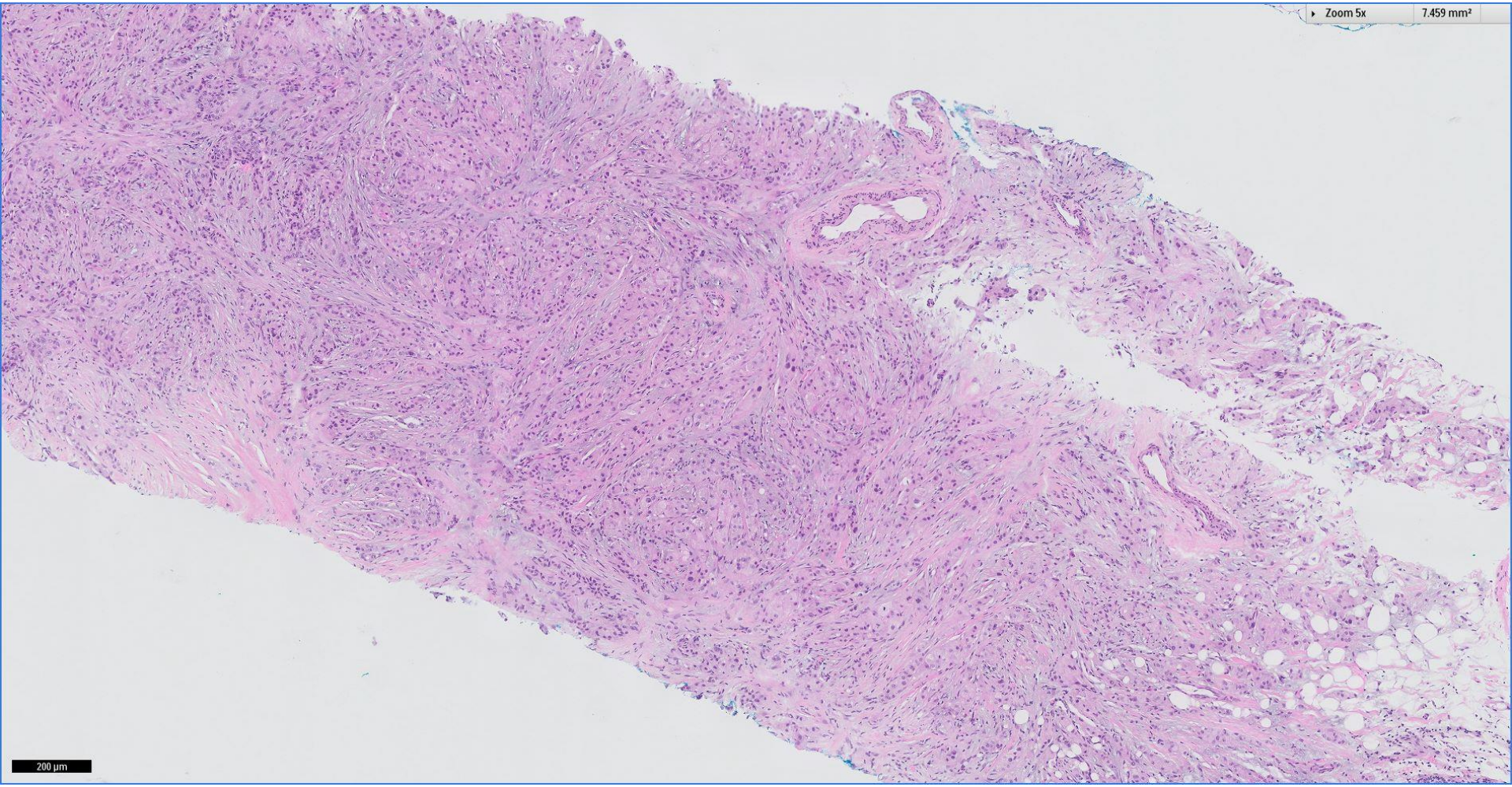
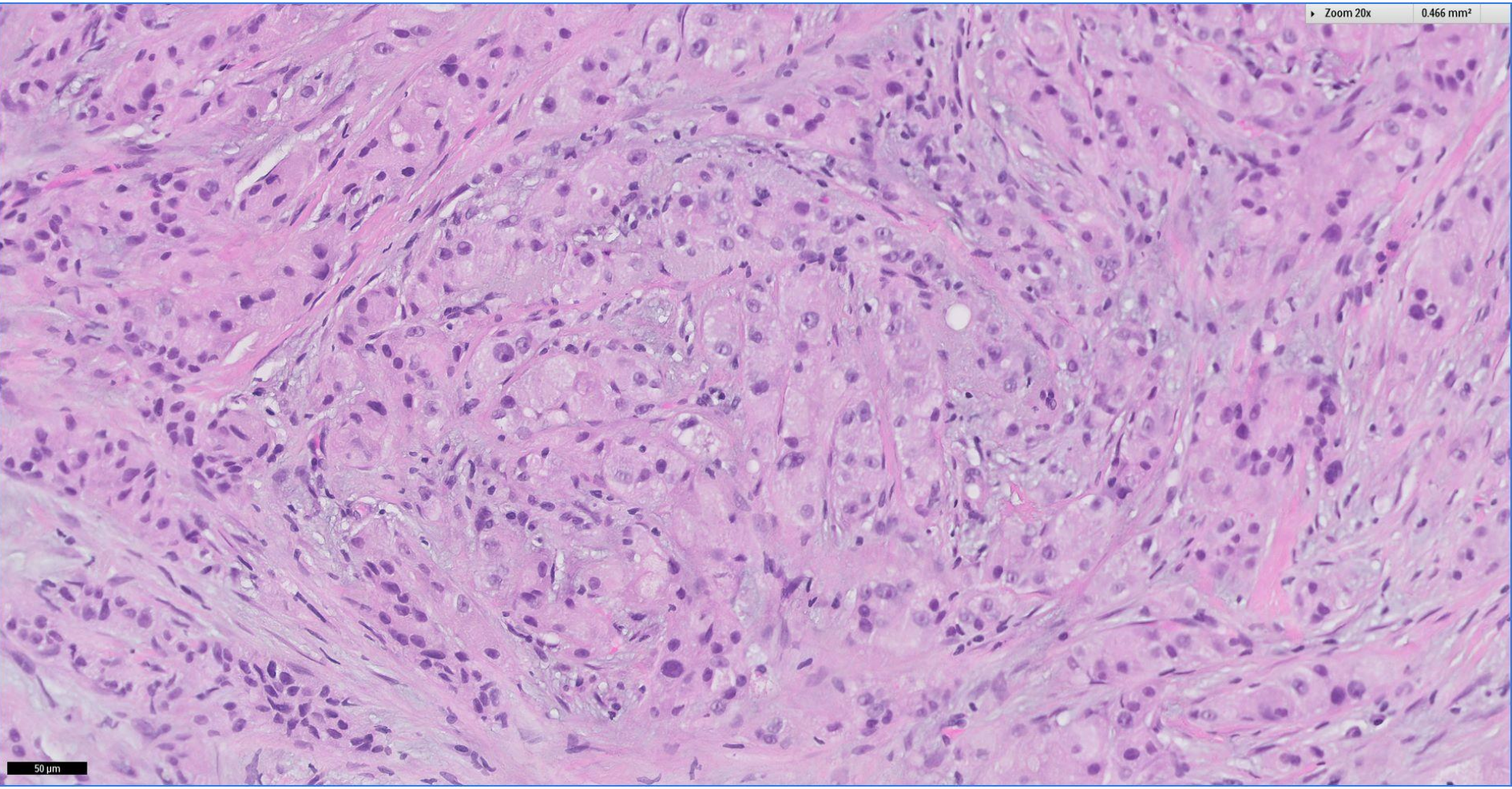
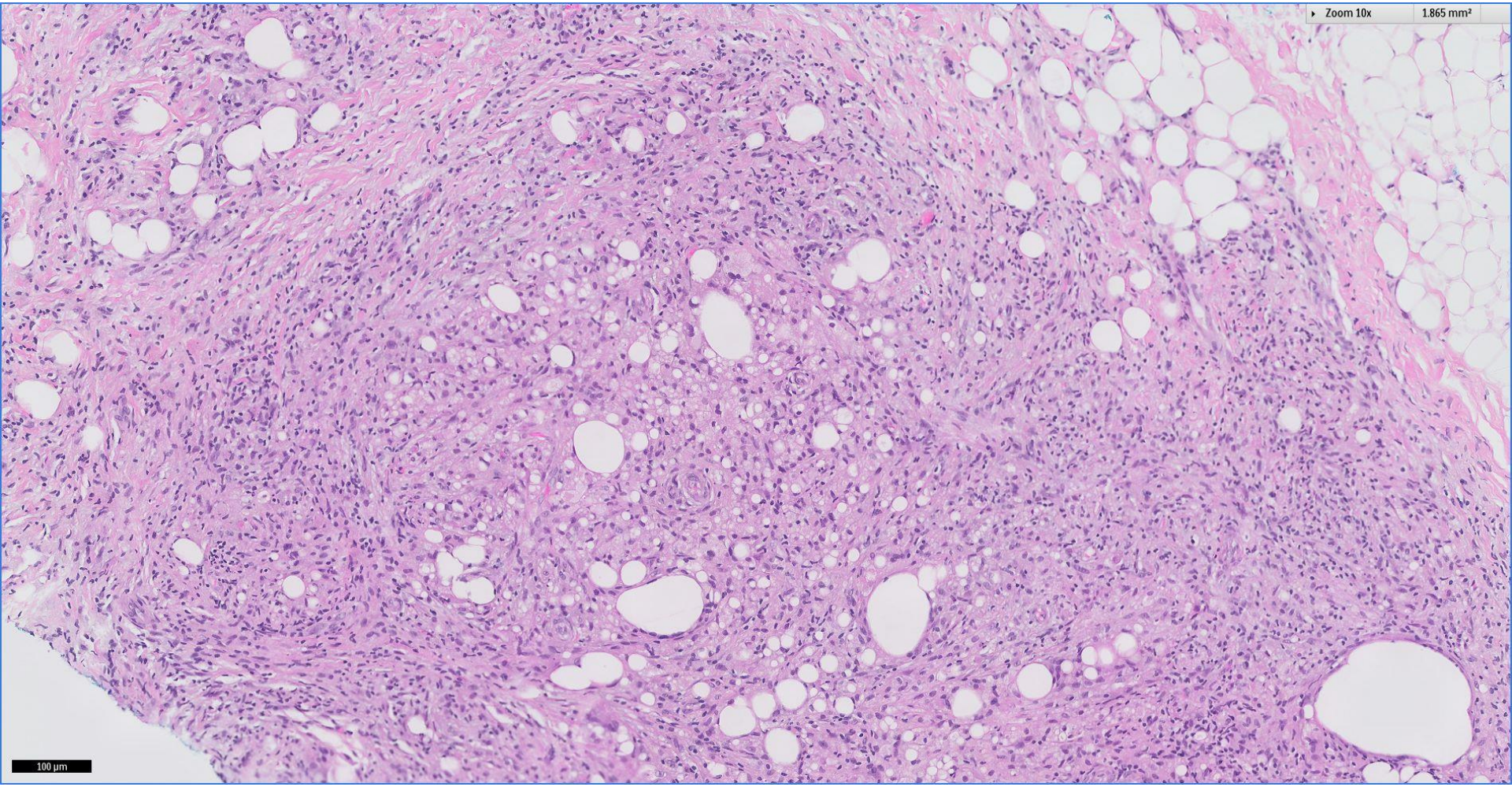
Case 27

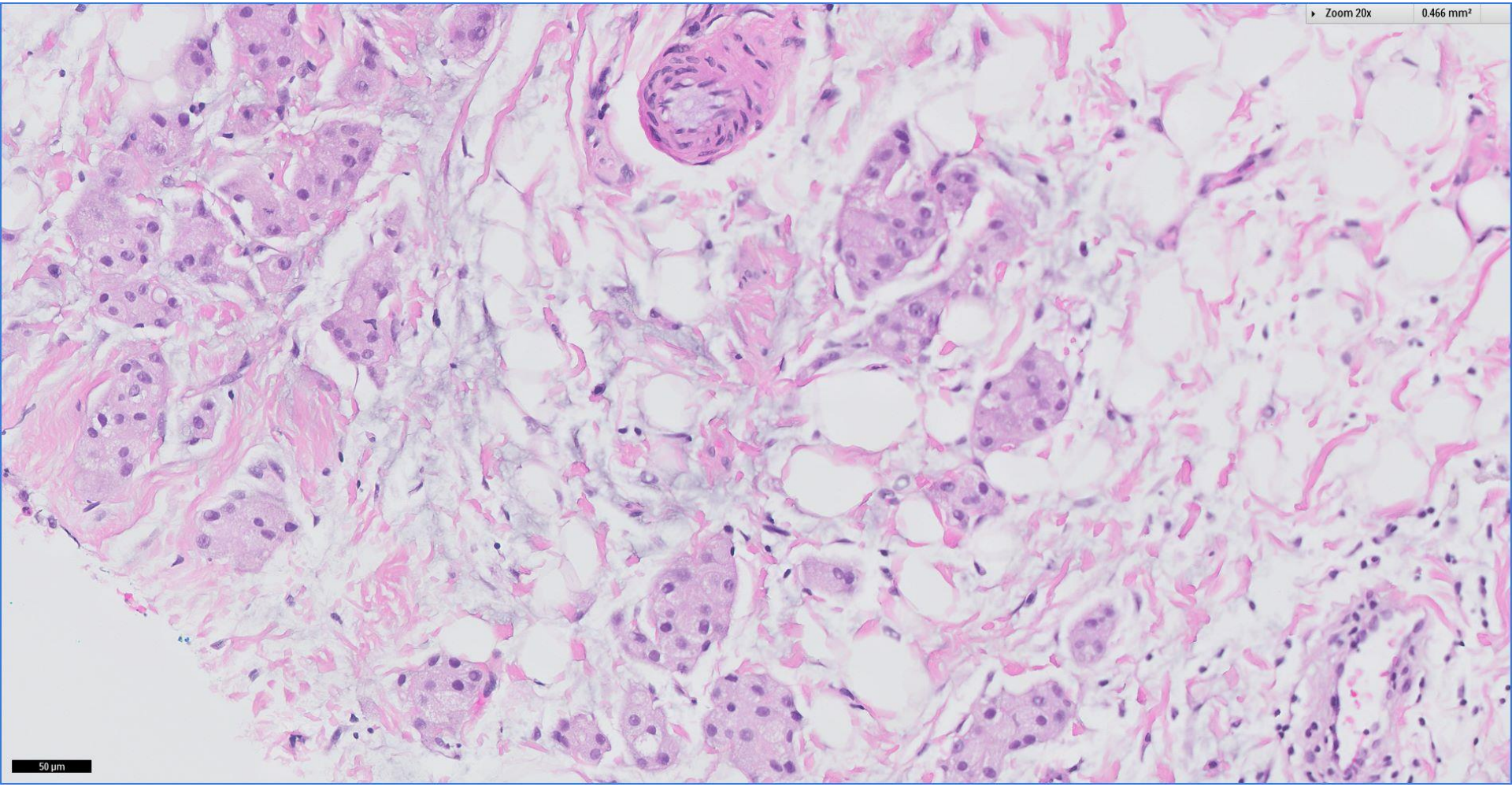
49 year old woman underwent core biopsy of a right breast 3 o'clock lump.

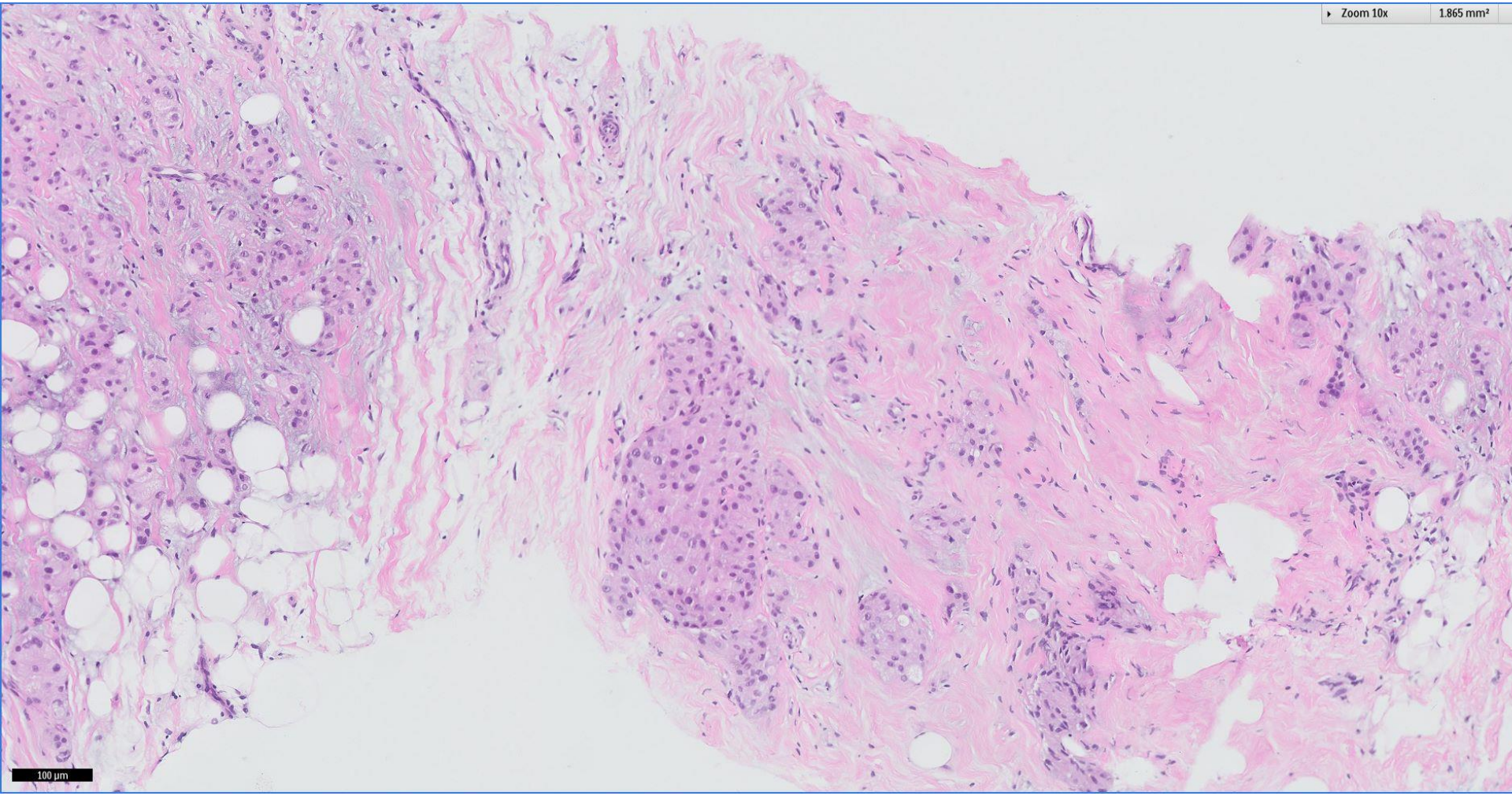

Zoom 0.5x
2 mm

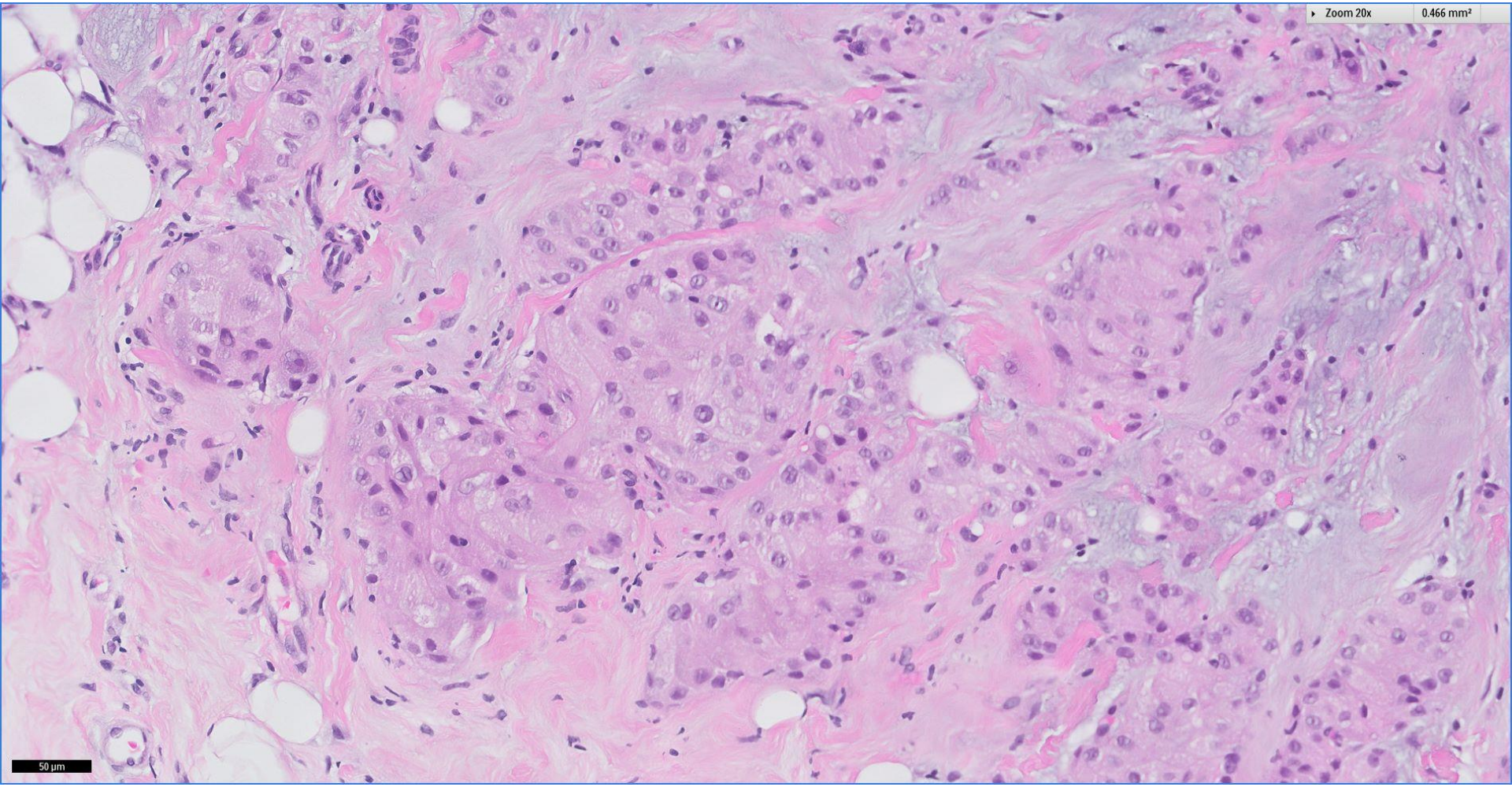

Zoom 5x
7.459 mm²
200 µm

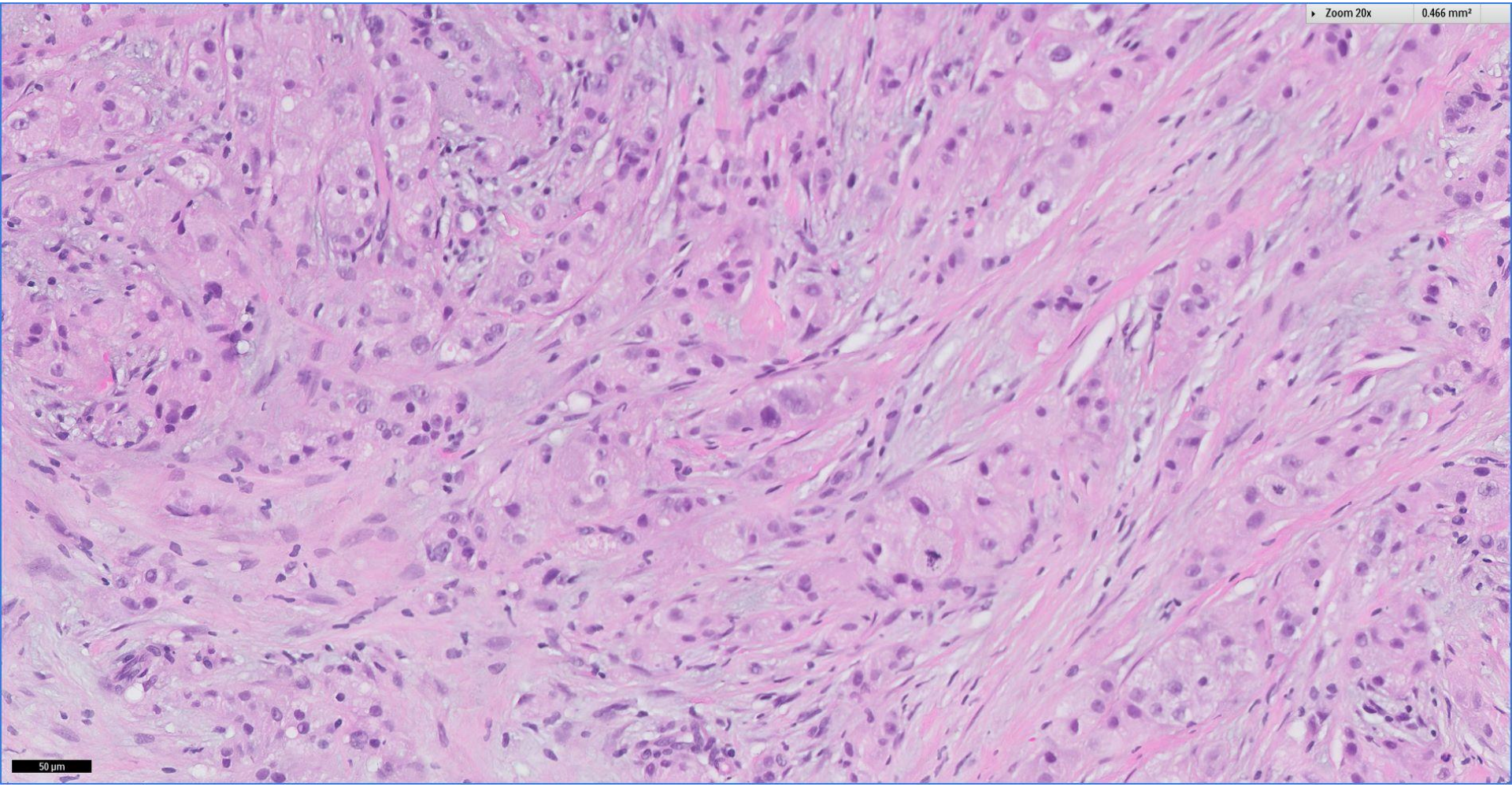

Zoom 20x
0.466 mm²
50 µm

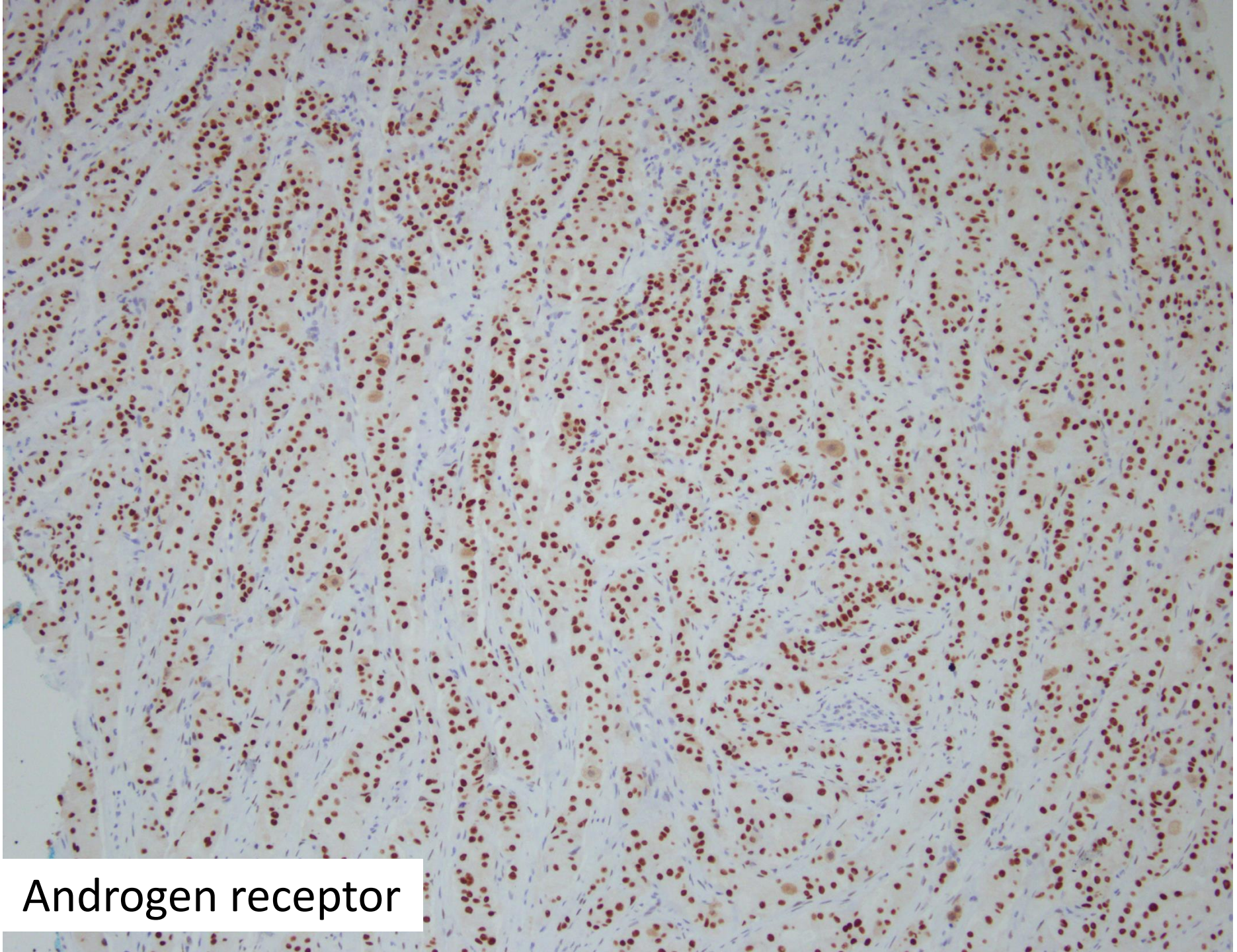

Zoom 10x
1.865 mm²
100 µm

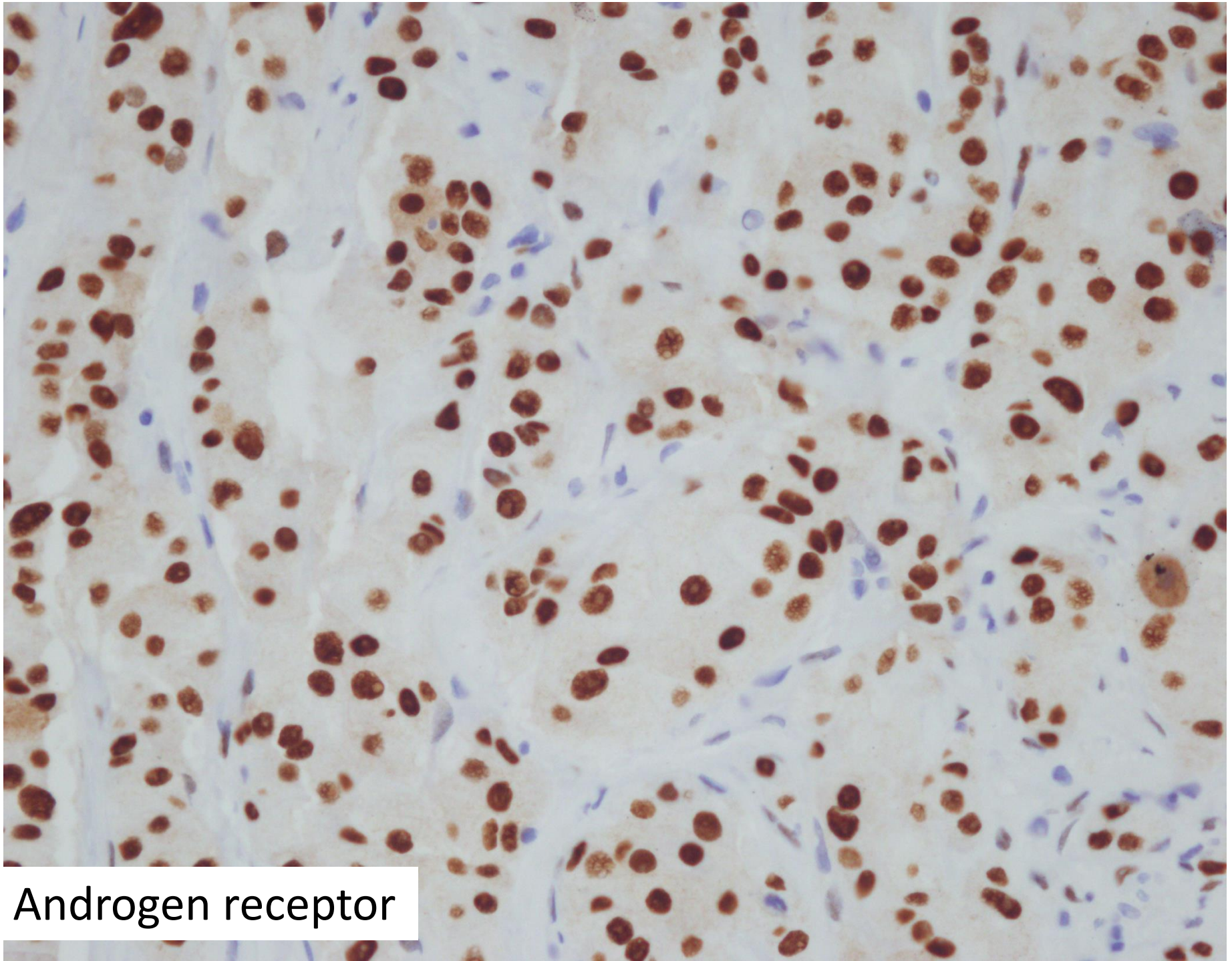

Zoom 20x
0.466 mm²
50 µm


Zoom 10x
1.865 mm²
100 µm


Zoom 20x
0.466 mm²
50 µm


Zoom 20x
0.466 mm²
50 µm


Androgen receptor


Androgen receptor

Core biopsy, right breast 3 o'clock lump:

Invasive carcinoma with apocrine features

Invasive carcinoma with apocrine features

- An invasive carcinoma in which the cells show cytological features of apocrine cells.
- These tumours are coded according to the primary invasive type.
- Focal apocrine differentiation is a common feature in invasive carcinomas of no special type (NST) as well as some special types, including tubular, lobular, micropapillary and medullary.
- Extensive apocrine differentiation is seen in approximately 4% of invasive breast carcinomas.

WHO 2012

Invasive carcinoma with apocrine features

- Constituent cells have enlarged nuclei with prominent nucleoli and either abundant granular, eosinophilic cytoplasm that shows diastase-resistant periodic-acid–Schiff (PAS) positivity (**type A cells**), or abundant foamy cytoplasm (**type B cells**), or a combination of both.
- Intracytoplasmic lipid has also been demonstrated in tumours with apocrine differentiation.

WHO 2012

Invasive carcinoma with apocrine features

- Areas of the tumour with apocrine differentiation are typically BCL2-negative and GCDFP-15–positive, although GCDFP-15 expression may be lost in advanced stage tumours.
- Staining for estrogen and progesterone receptors (ER and PR) is usually negative.
- Novel isoform of ER (ER-alpha36) has recently been shown to be frequently overexpressed.
- Tumours that show androgen receptor positivity, in combination with triple negativity, overwhelmingly demonstrate apocrine features histologically (immunophenotype identifies tumours that have the distinct “apocrine molecular signature”).

WHO 2012

Invasive carcinoma with apocrine features

- Tumours composed entirely of type A cells may be confused with a granular cell tumour.
- Those in which type B cells predominate may resemble an inflammatory reaction or a histiocytic proliferation.
- Antibodies to keratin can aid diagnosis in such cases.
- An “apocrine molecular signature”, identified by gene-expression array analysis, is characterized by increased androgen signalling and significant overlap with the “HER2 group,” as defined by microarray studies.

WHO 2012

Invasive carcinoma with apocrine features
Genetics

- Molecular apocrine subtype by gene-expression array analysis is not equivalent to apocrine differentiation in breast cancer.
- About half of carcinomas with apocrine differentiation show this molecular signature, including most pleomorphic lobular carcinomas with apocrine features.
- These tumours do not form a distinct cluster and are composed of “apocrine” and “luminal” molecular subtypes.
- Apocrine differentiation is a common feature of many subtypes of breast cancer, and “apocrine carcinomas” do not represent a distinct entity.

WHO 2012

Invasive carcinoma with apocrine features
Prognosis

- Same clinical outcome as invasive carcinomas NST, when matched for grade and stage.
- Reports of:
  - Better prognosis.
  - Worse prognosis ~ carcinomas harbouring apocrine differentiation clustering with the “molecular apocrine signature” had a high 21-gene recurrence score and a poor 70-gene prognosis signature.
- Androgen signalling associated with these tumours may lead to the development of new therapeutic modalities.

WHO 2012

Breast Pathology Course 2014