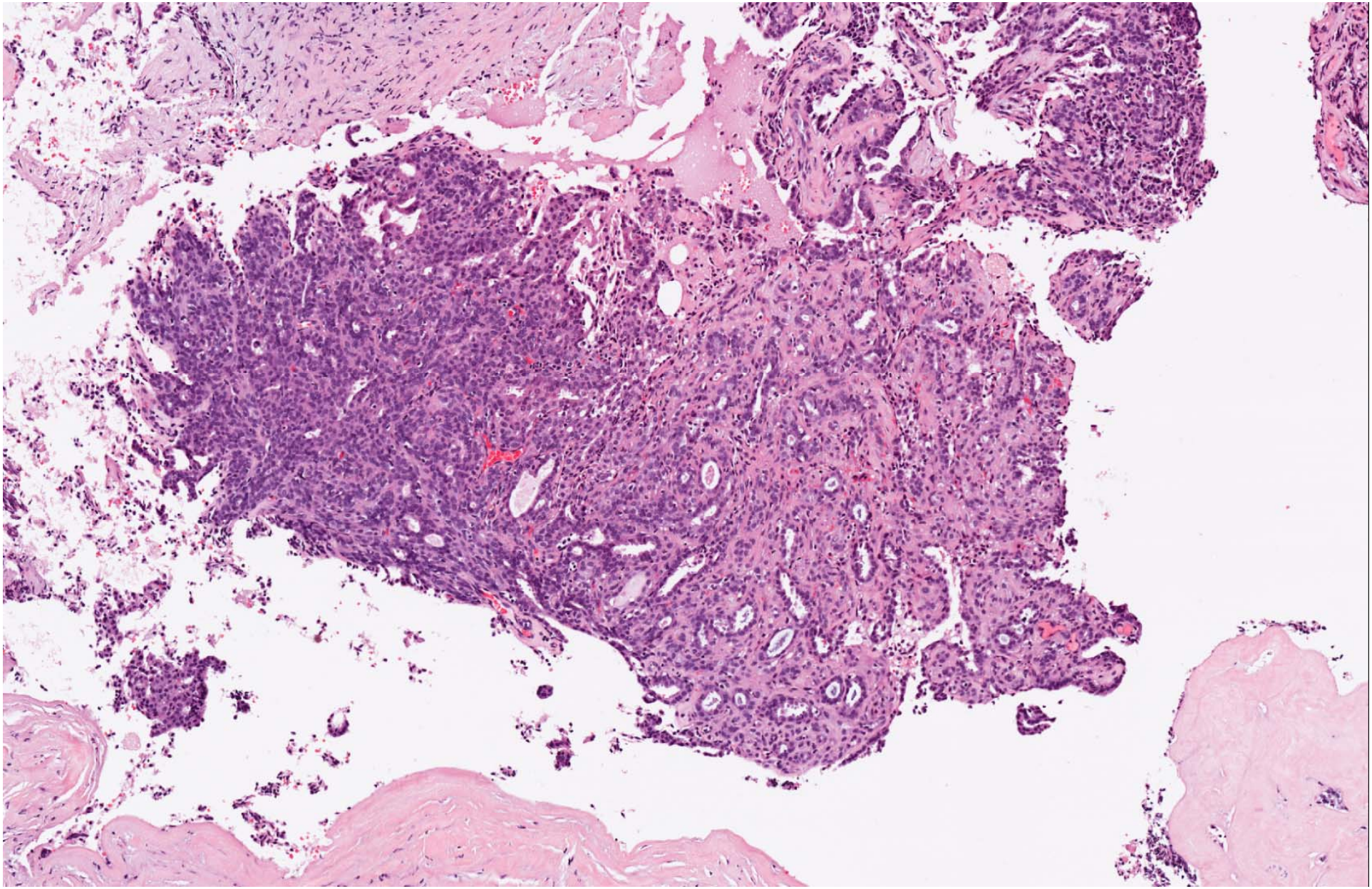
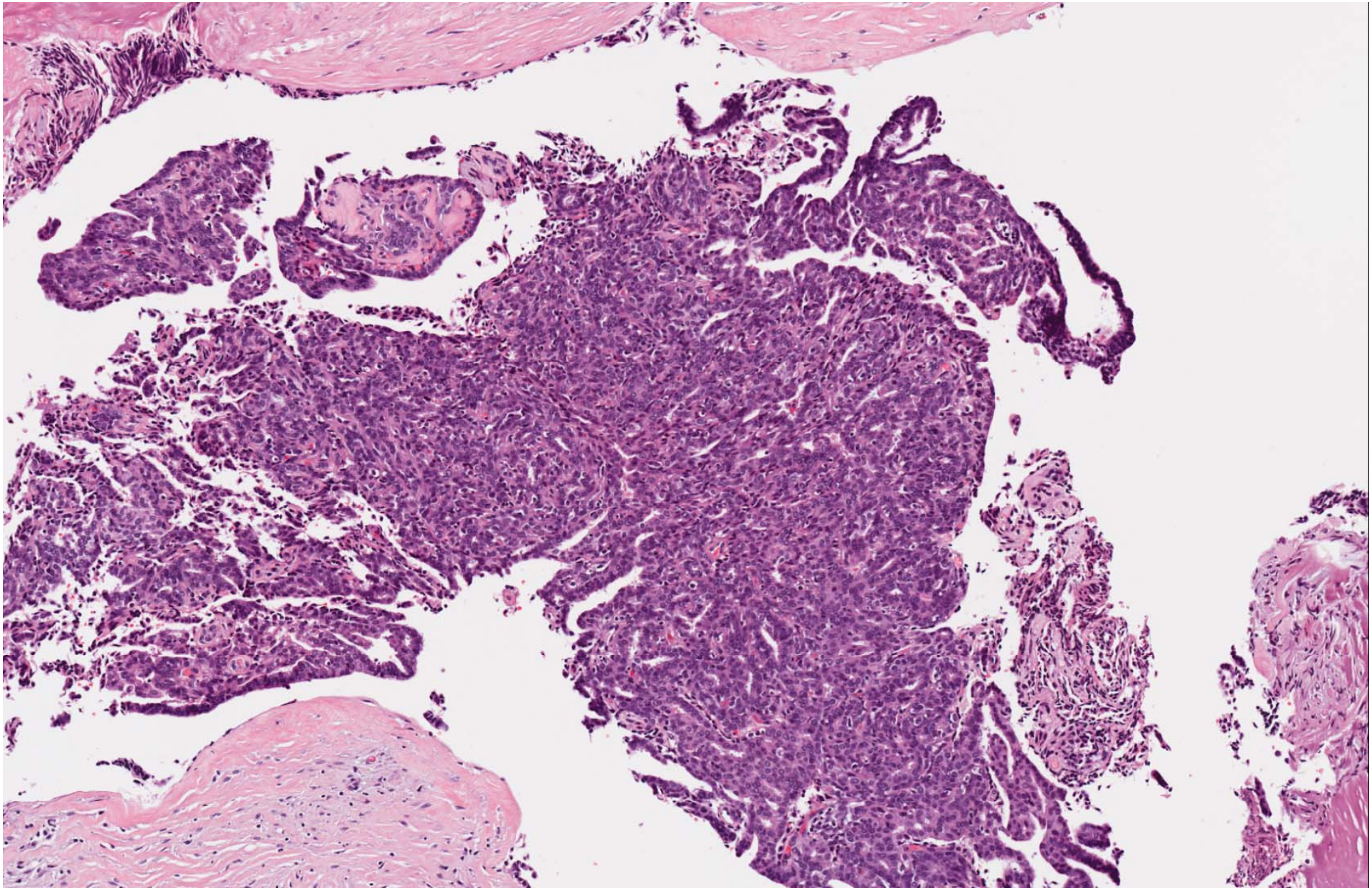
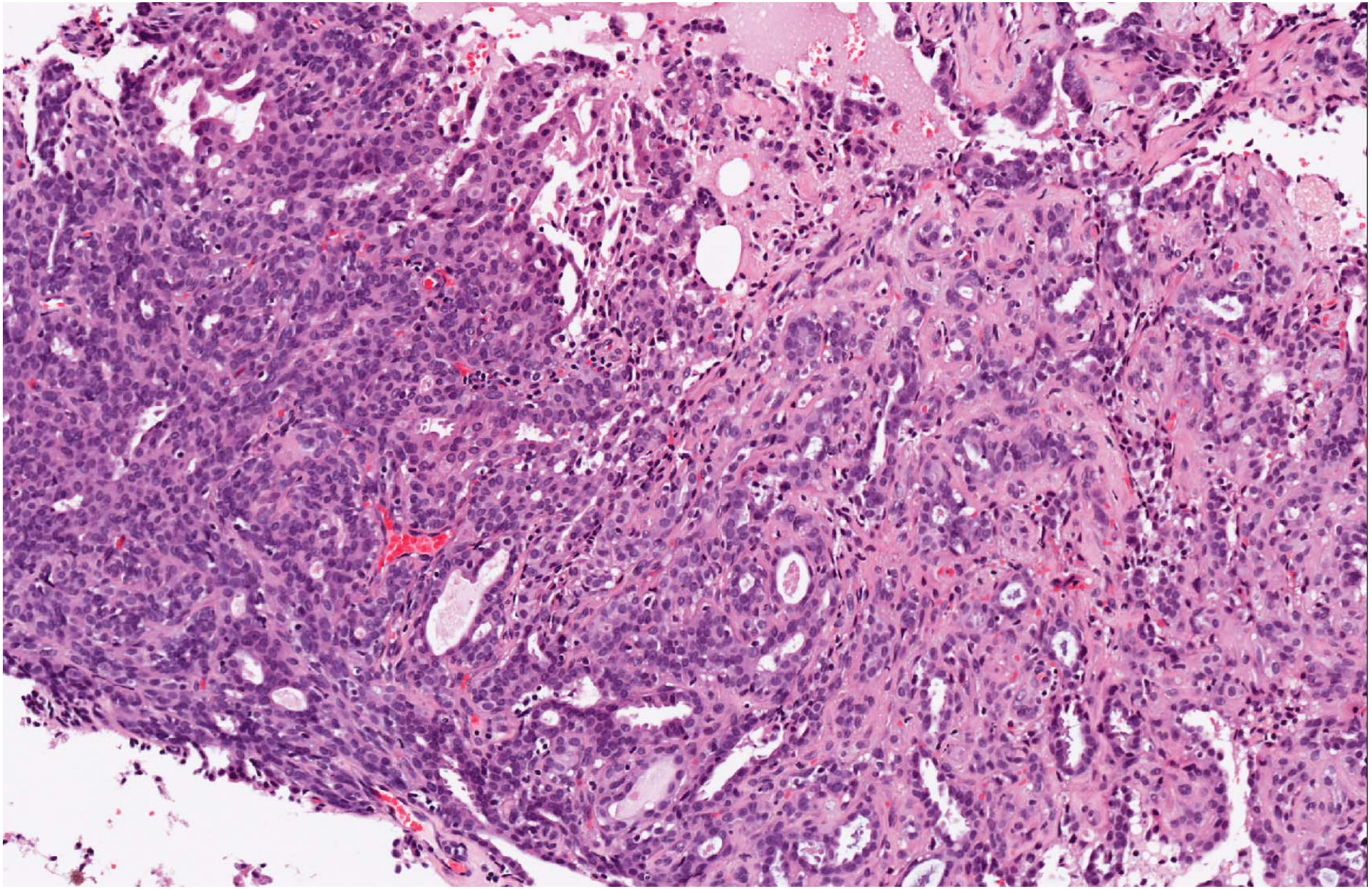
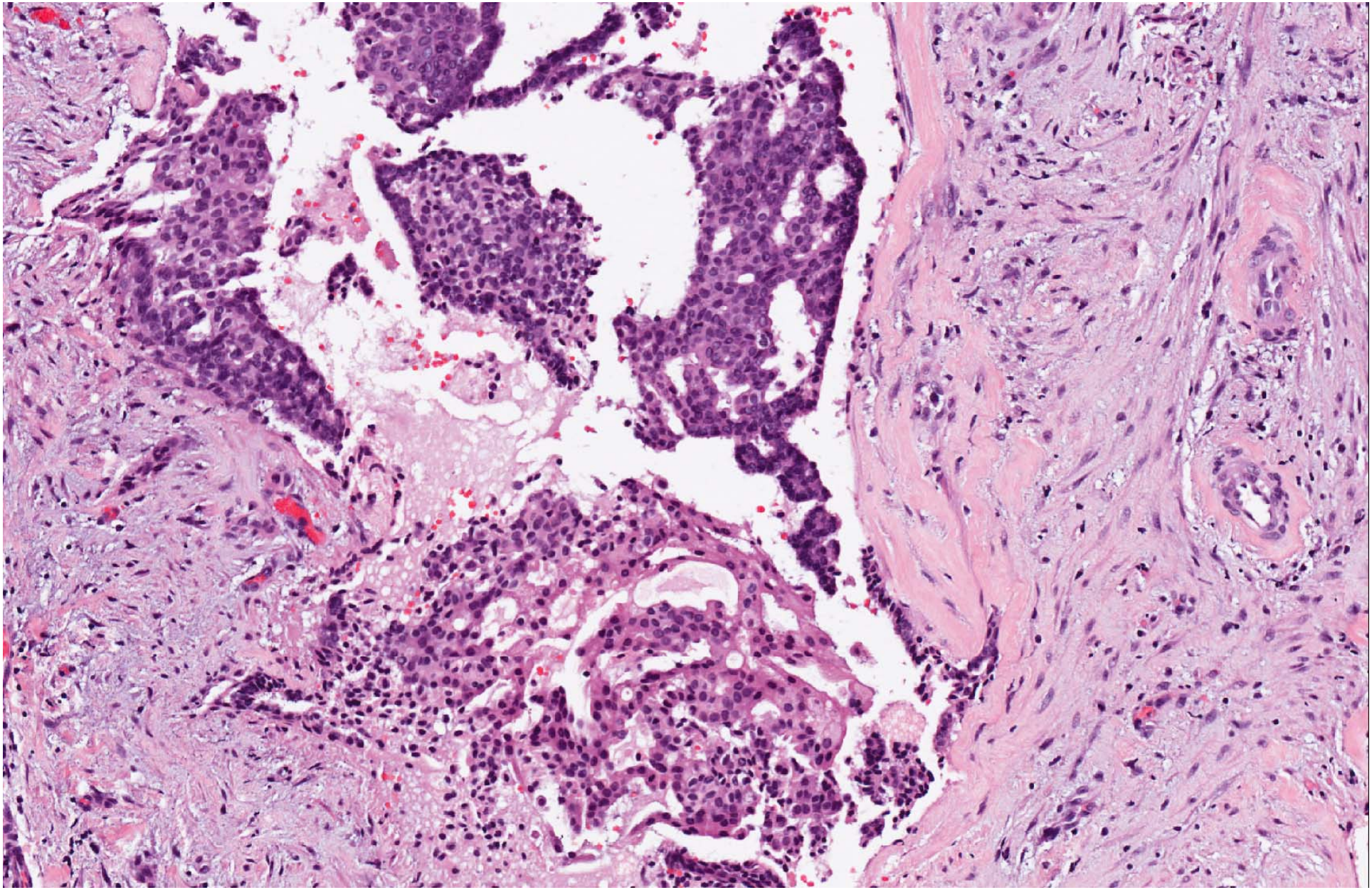
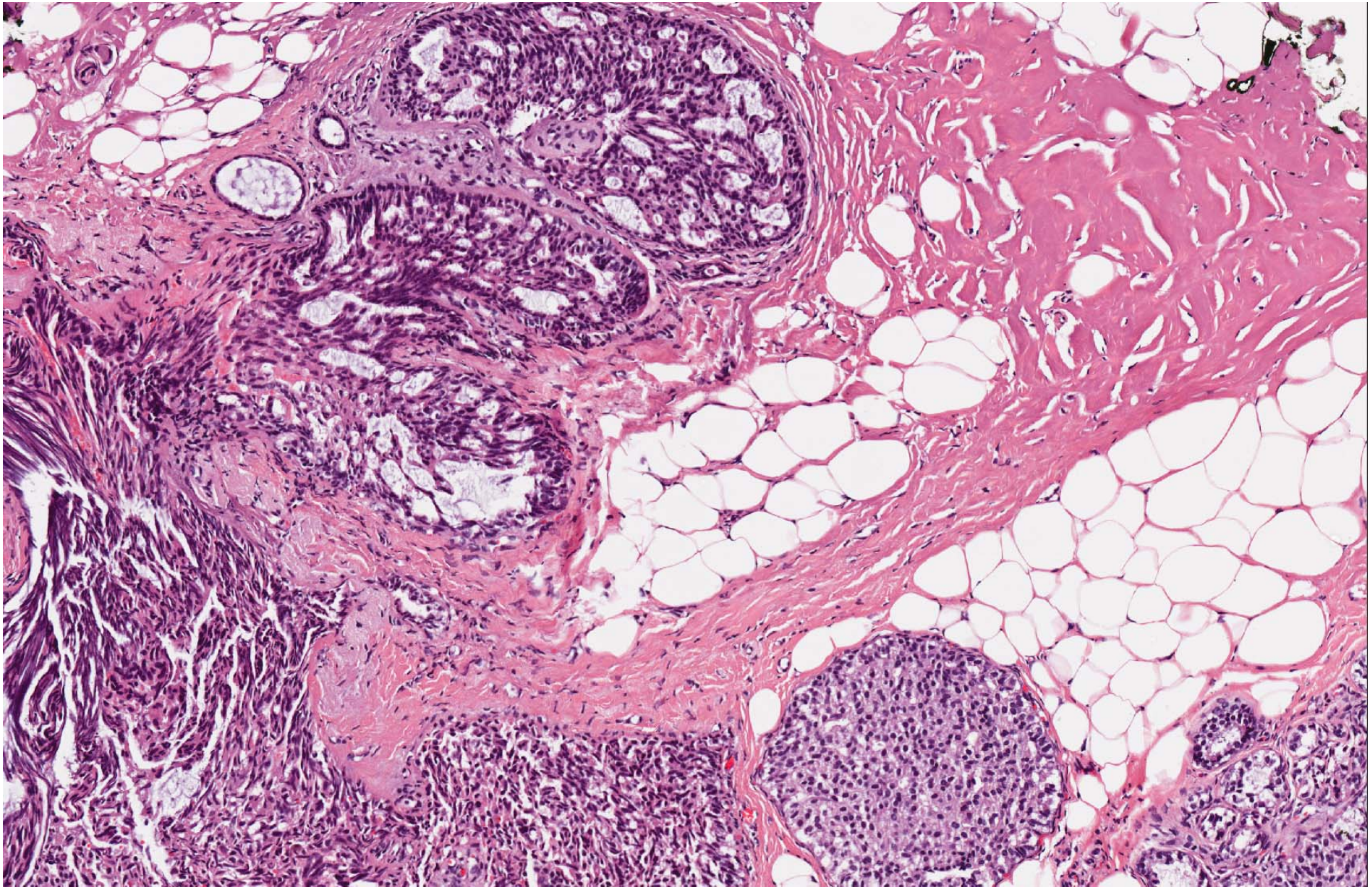
- Set A.6
- 48 year old Chinese lady. History of left breast lump with trucut biopsy showing portions of a papillary lesion. Underwent open excision for removal. Current sections are from the open excision specimen.

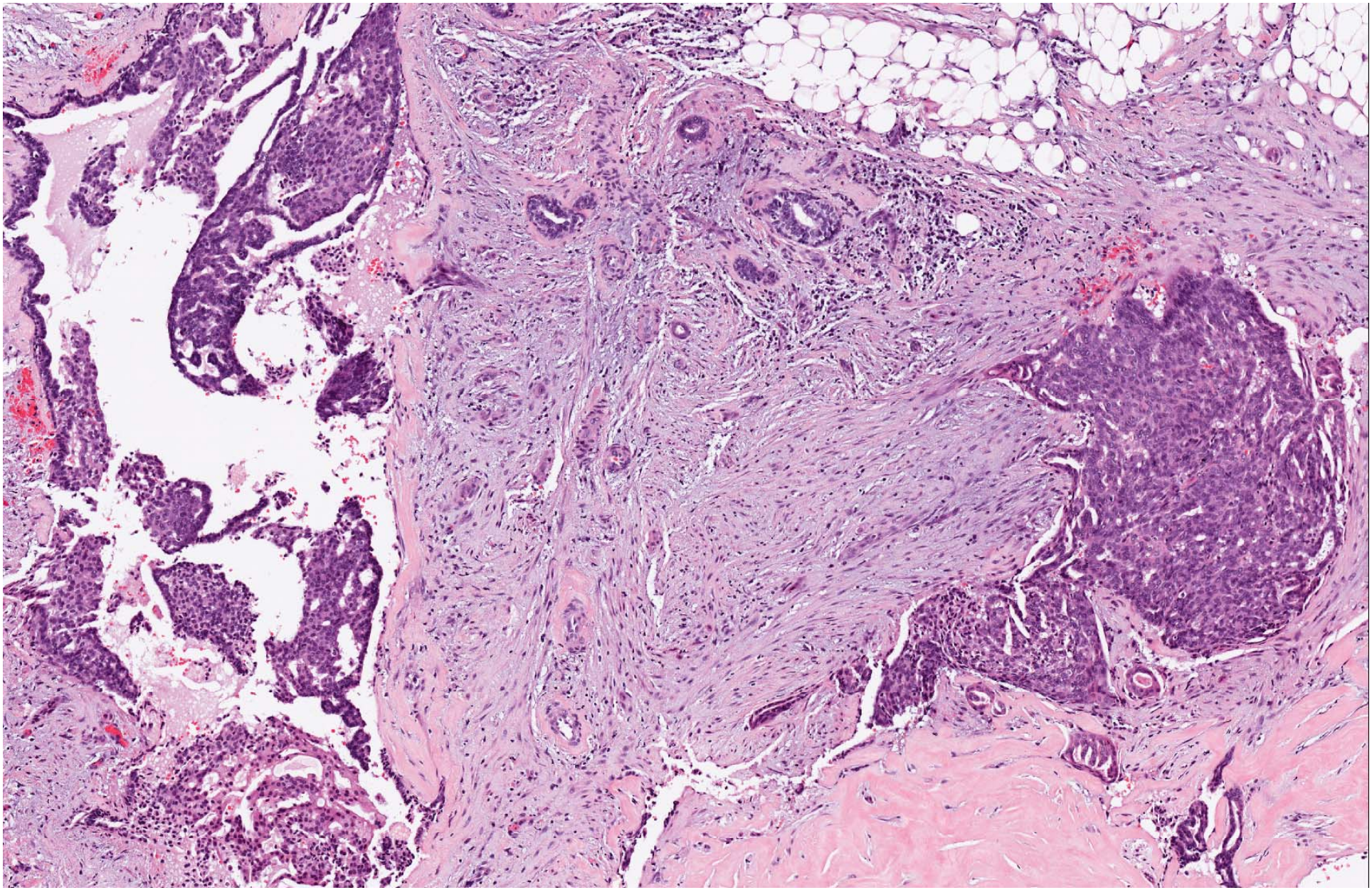




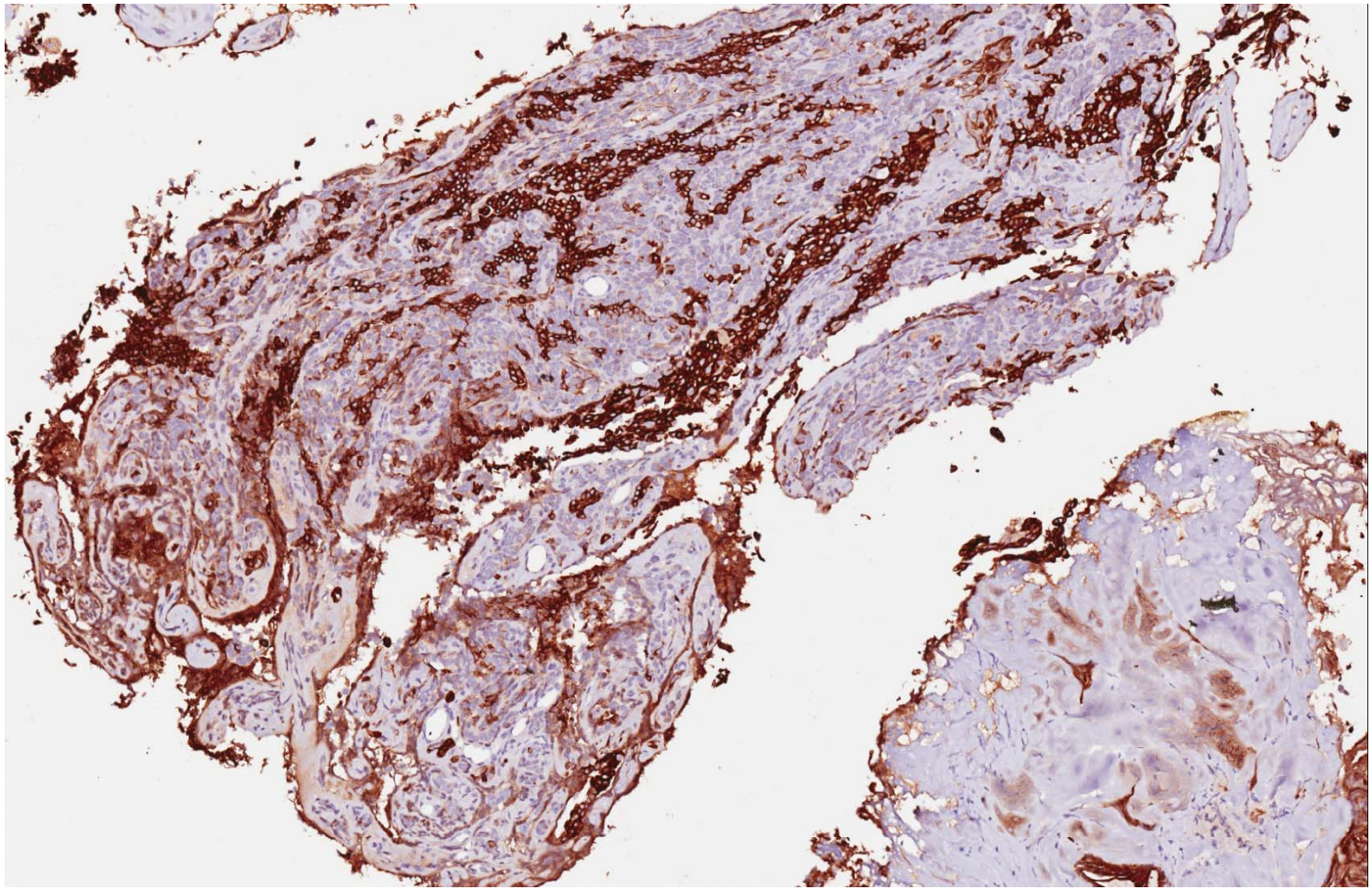




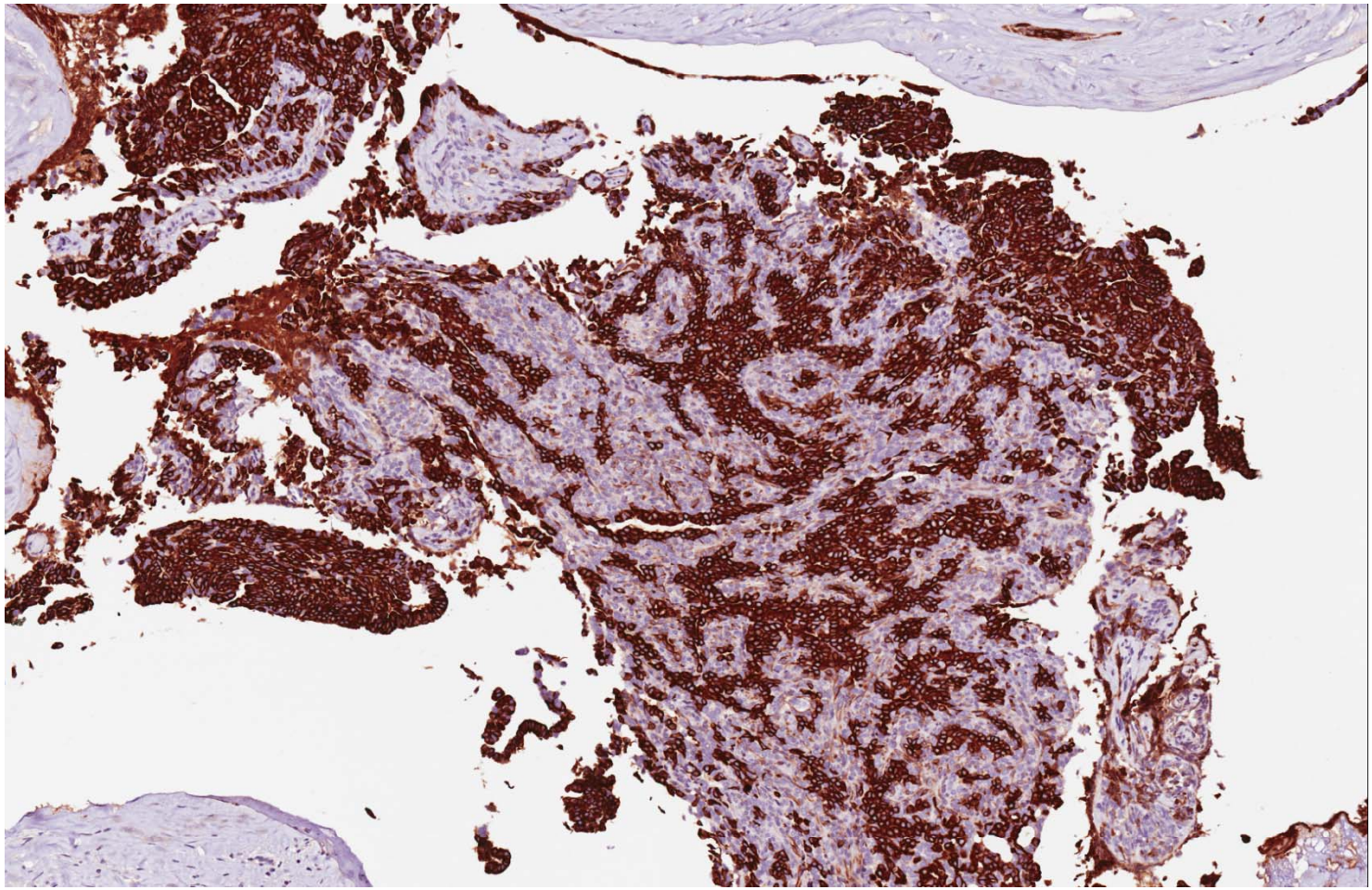




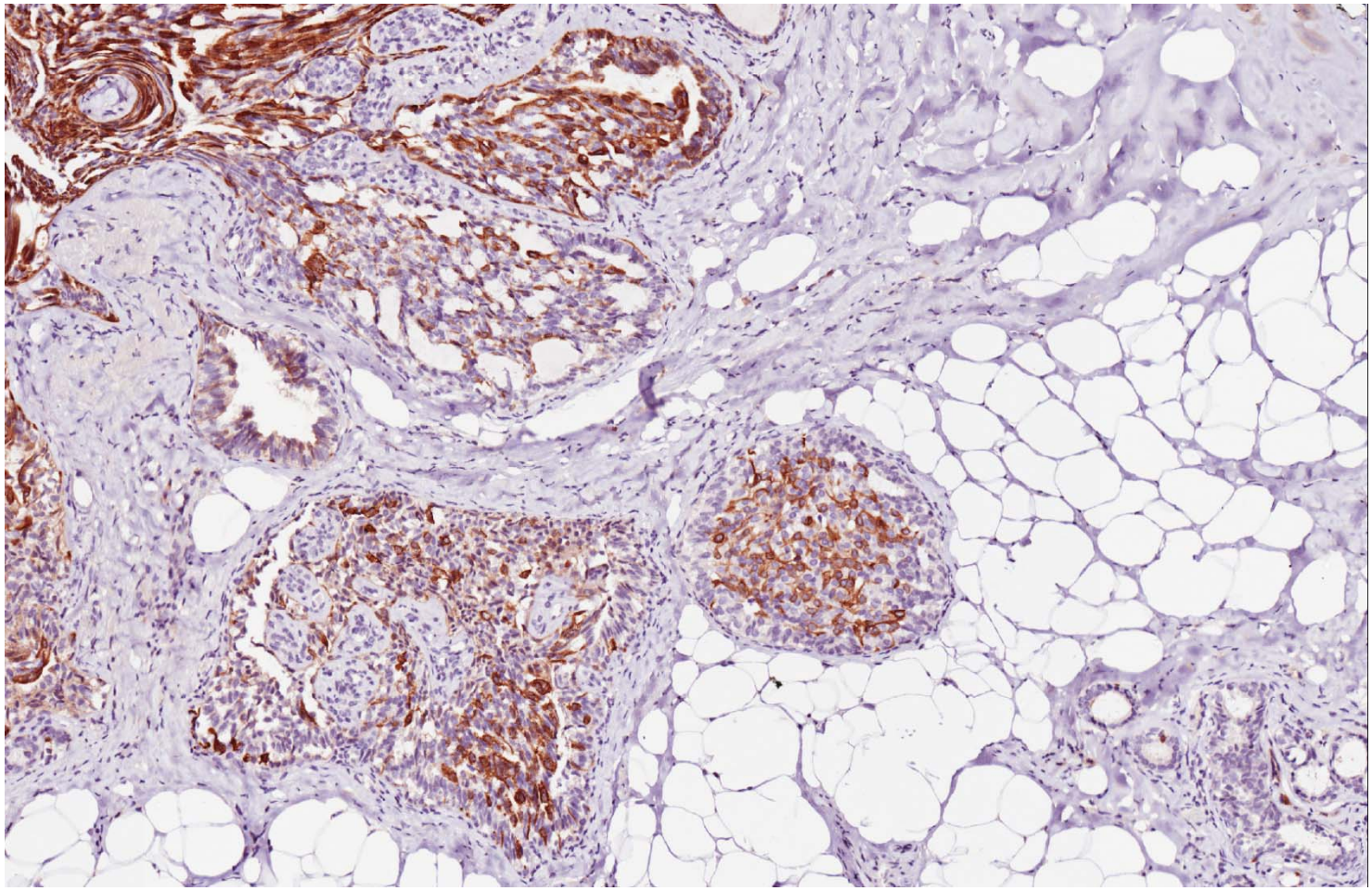
CK5/6



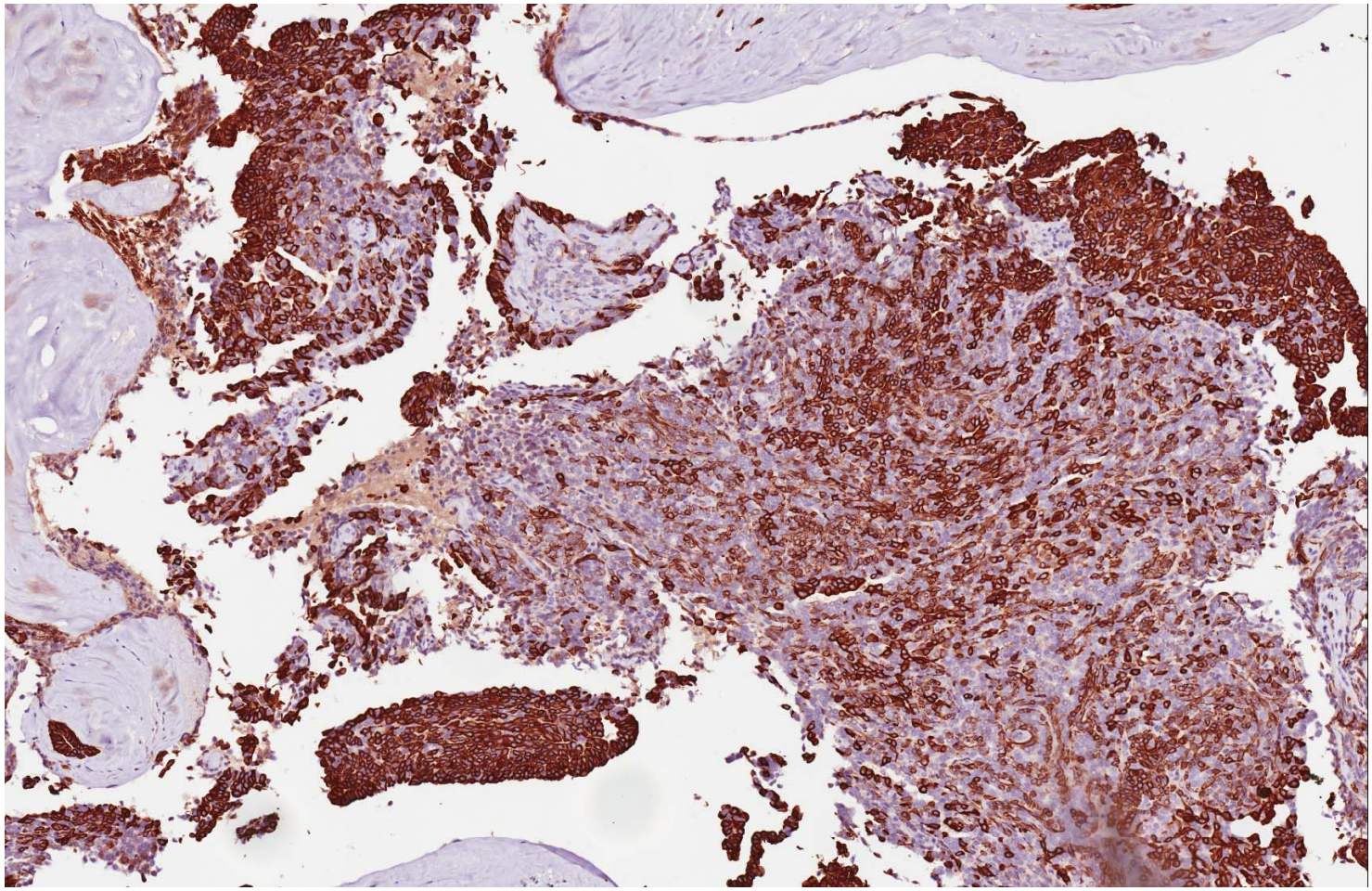
CK5/6



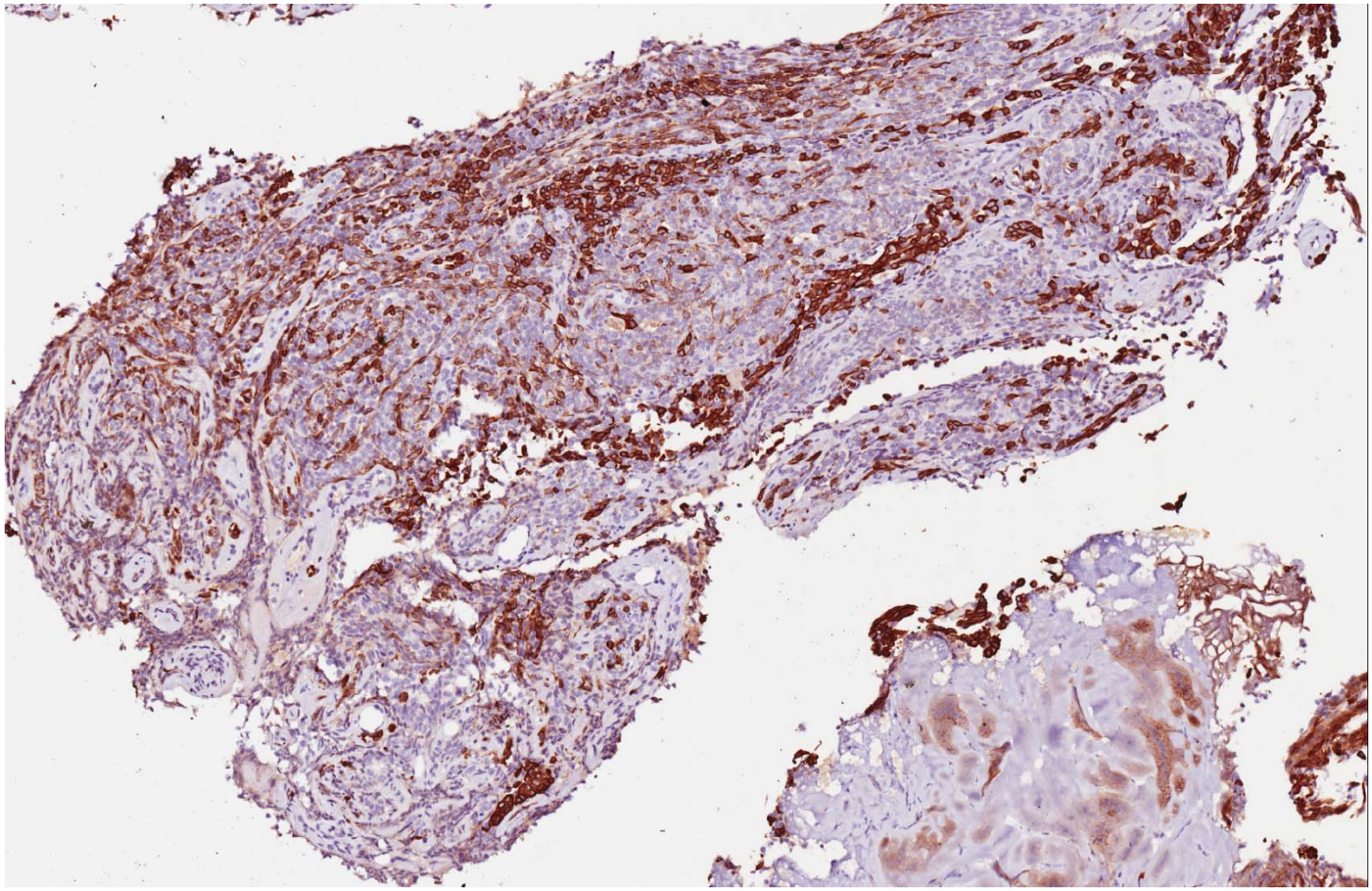
CK14



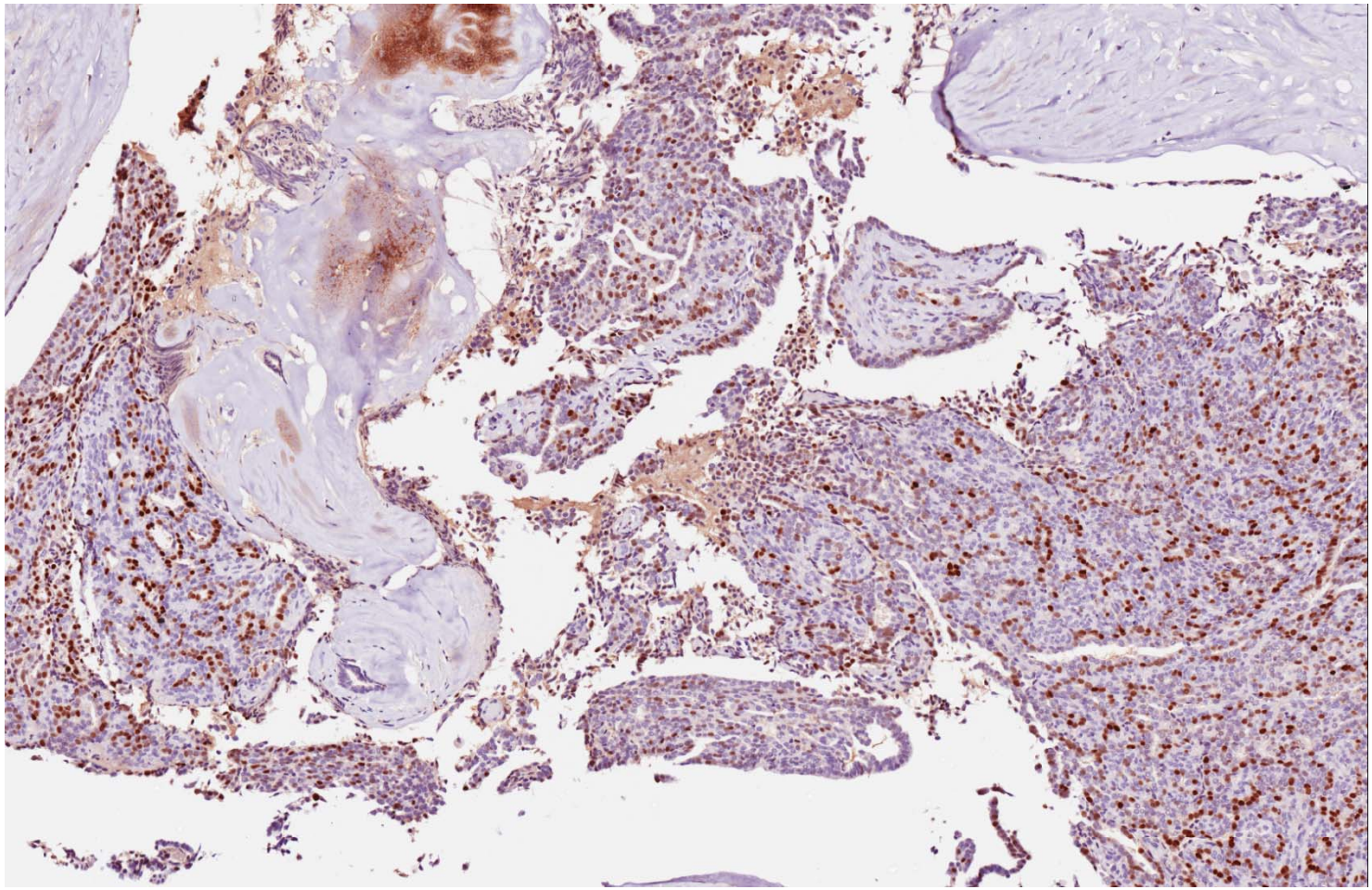
CK14



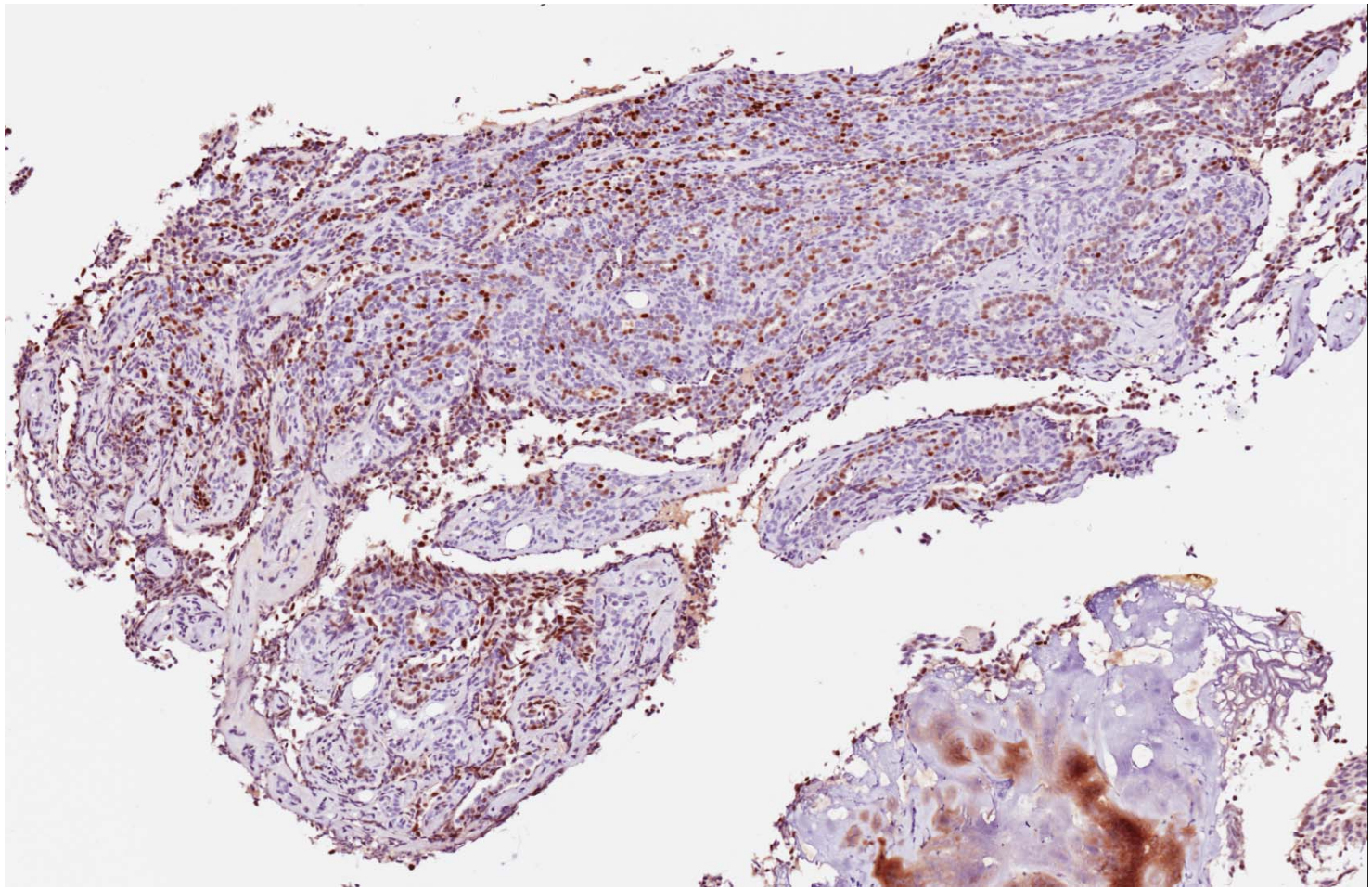
CK14



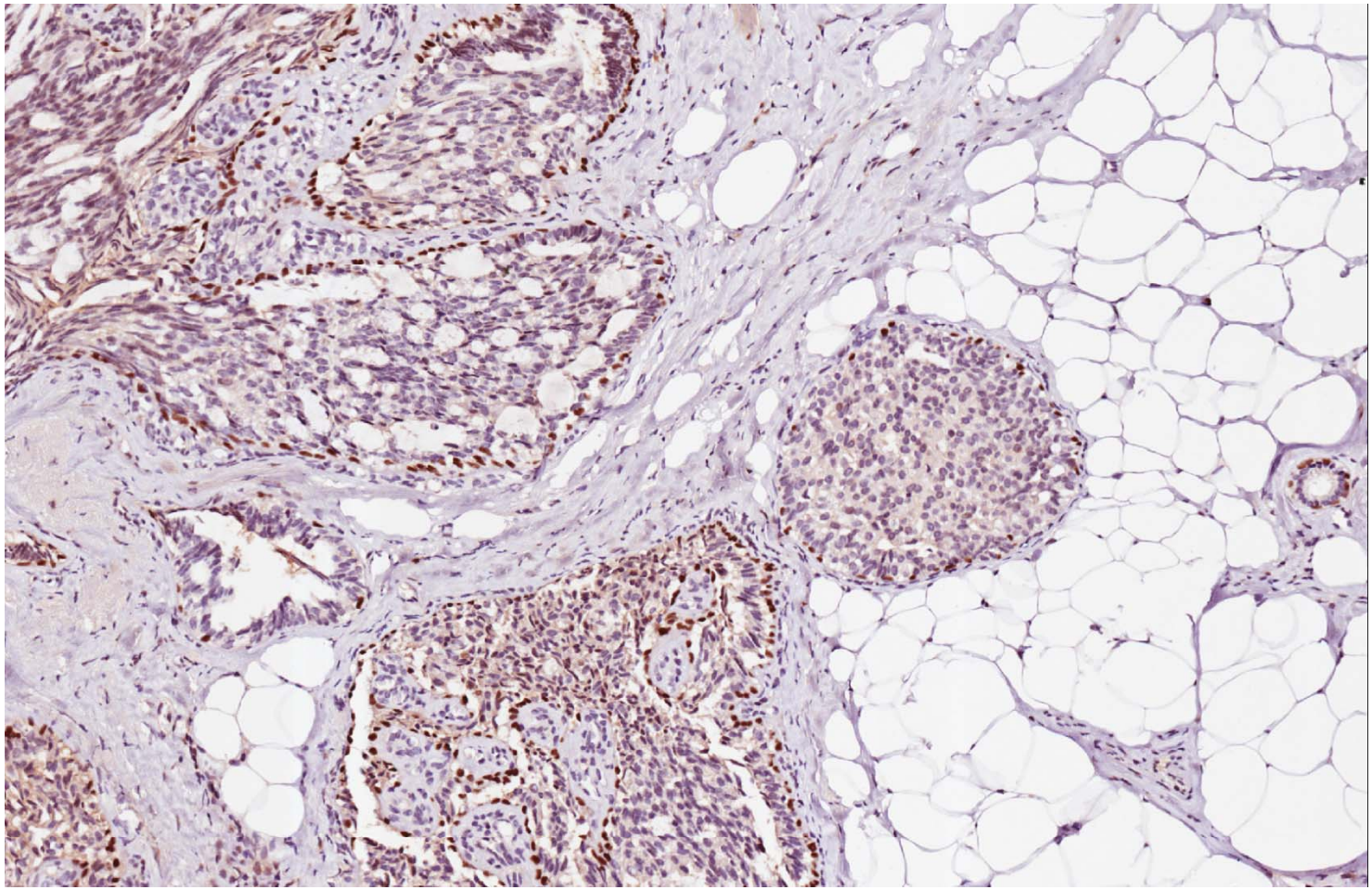
ER



ER



p63



- Intraductal papilloma with florid usual epithelial hyperplasia and biopsy tract.

Use of cytokeratins to distinguish intraductal papilloma with usual epithelial hyperplasia from papillary ductal carcinoma in situ.

Cytokeratins

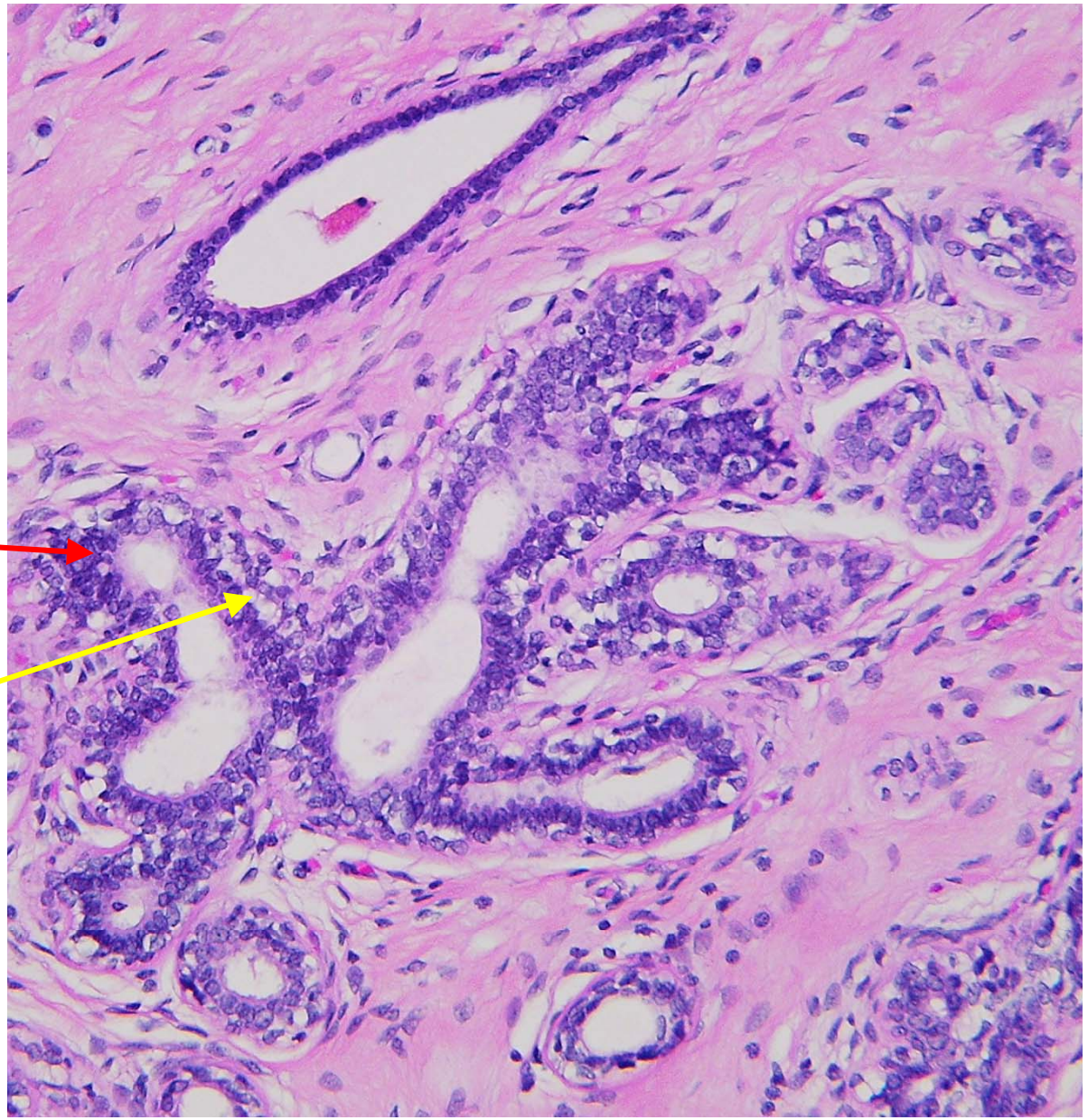
- Family of intermediate filaments (IF).
  - Other IF: vimentin, desmin, neurofilament proteins, GFAP, lamins (nuclear envelope proteins).
- Cytoplasmic scaffold to endow epithelial cells with the ability to sustain mechanical and non-mechanical stresses.
- Other functions: response to stress, cell signalling, apoptosis.

Cytokeratins

- Highly complex multigene family of polypeptides.
- MW from 10-68 kDa.
- 20 CKs:
  - 12 (CK9-CK20) comprise acidic Type I.
  - 8 (CK1-CK8) belong to neutral-basic Type II.

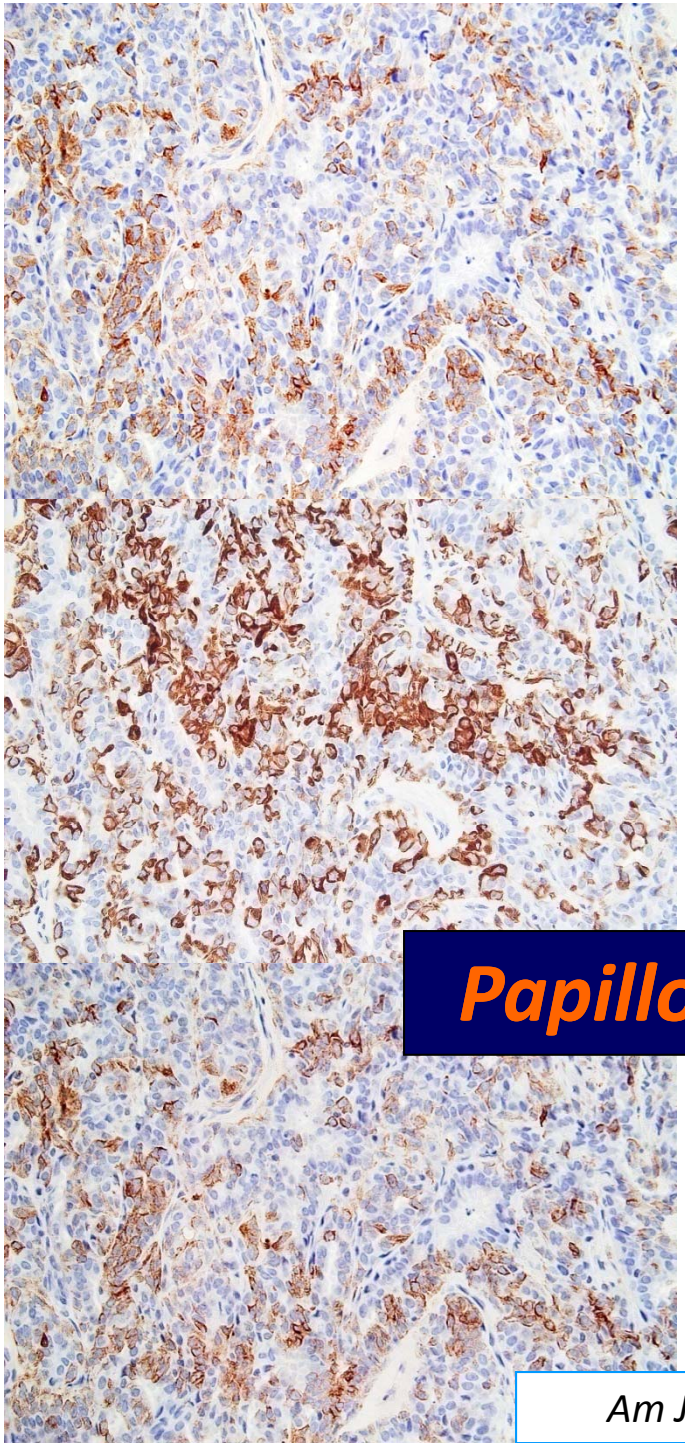
Normal breast ducts and ductules

- 2 cell types lining the breast ducts and ductules.
- Inner luminal epithelial cells.
- Outer myoepithelial cells.



Cytokeratins in the breast

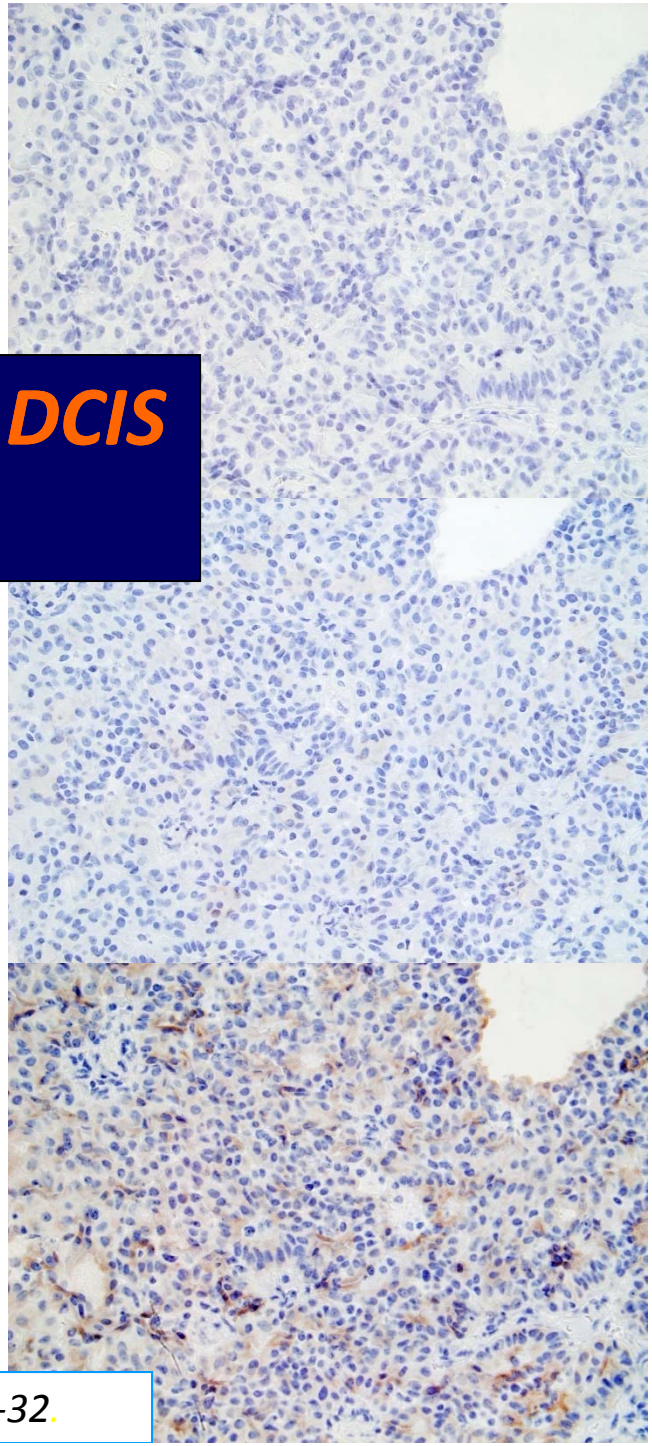
- Luminal epithelial cells:
  - Express simple epithelial keratins, CK7,8,18,19.
- Myoepithelial cells:
  - Express basal type keratins, CK5,14,17.



CK5/6

CK14

34βE12



Papillary DCIS

Papilloma

Am J Surg Pathol. 2005 May;29(5):625-32.

Ancillary tools

- to distinguish a benign papilloma from DCIS:
  - Cytokeratins 5/6, 14
    - Pitfall: apocrine cells and columnar cell change are not reactive.
  - p63
  - SMA
  - Calponin
  - Caldesmon
  - SMM
  - CD10
  - CD44s
  - CK7,8,18,19 (to demonstrate participation of luminal cells)
  - ER, PR

Epithelial displacement in papillary lesions

- Phenomenon of dislodgement of epithelial cells due to instrumentation:
  - FNAC, core biopsy, anaesthetic injection, wire localisation.
  - Number of passes, needle gauge.
- Papillary lesions are particularly prone:
  - Friability of the papillary fronds.
  - Cystic distension of duct.
  - 94.3% of lesions with displaced epithelium have a papillary component (*Arch Pathol Lab Med 2005; 129: 1465-9*).

Epithelial displacement

- Epithelial cells in biopsy tract with attendant reactive changes.
- In benign lesions, there may be accompaniment by myoepithelial cells within the epithelial clusters, which can be demonstrated with IHC.
- For in situ malignant lesions, the displaced epithelial cells may not have myoepithelial cells, and judgement is required to rule out invasion:
  - Small focus, rounded nests embedded within the biopsy tract, lack of invasion elsewhere, favour displacement.

Learning points

- Papilloma with usual epithelial hyperplasia vs papillary DCIS - use of CK5/6, CK14 and ER.
- Previous biopsy tract and how to recognise dislocated cells (epithelial displacement) from invasion.