IGMP Institut für Gewebemedizin und Pathologie

GI pathology – the basics

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Resident Training 22.01.2025

Agenda

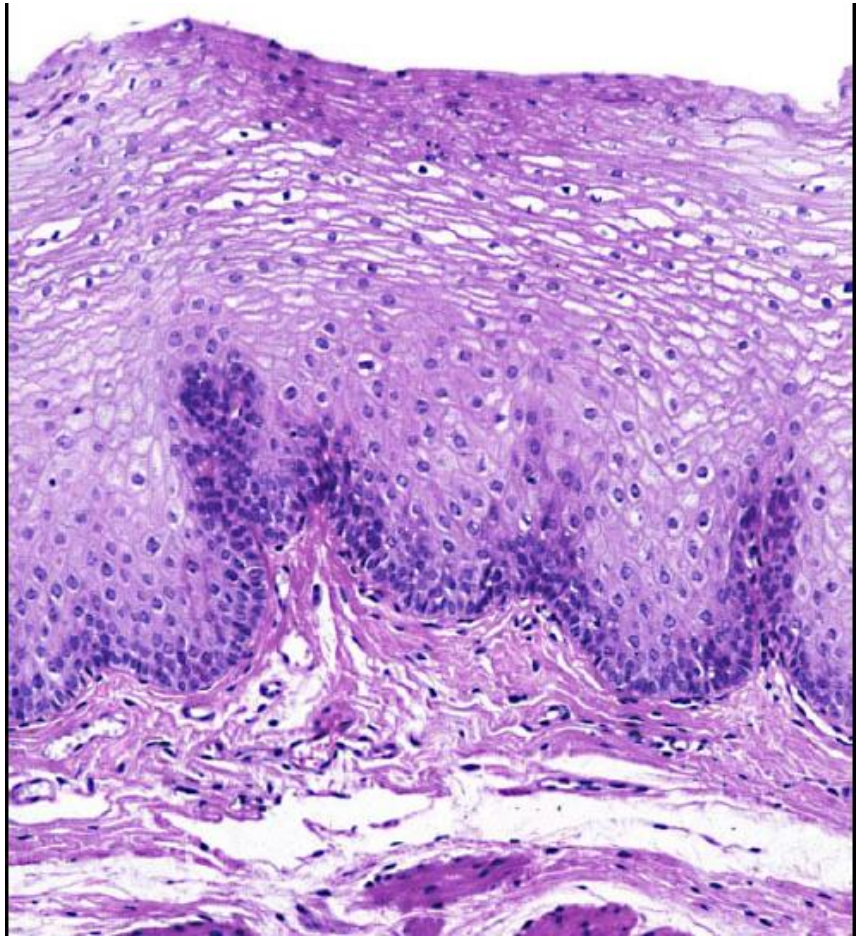
1. Most common diseases of the upper/lower GI tract and histology

2. What is normal?

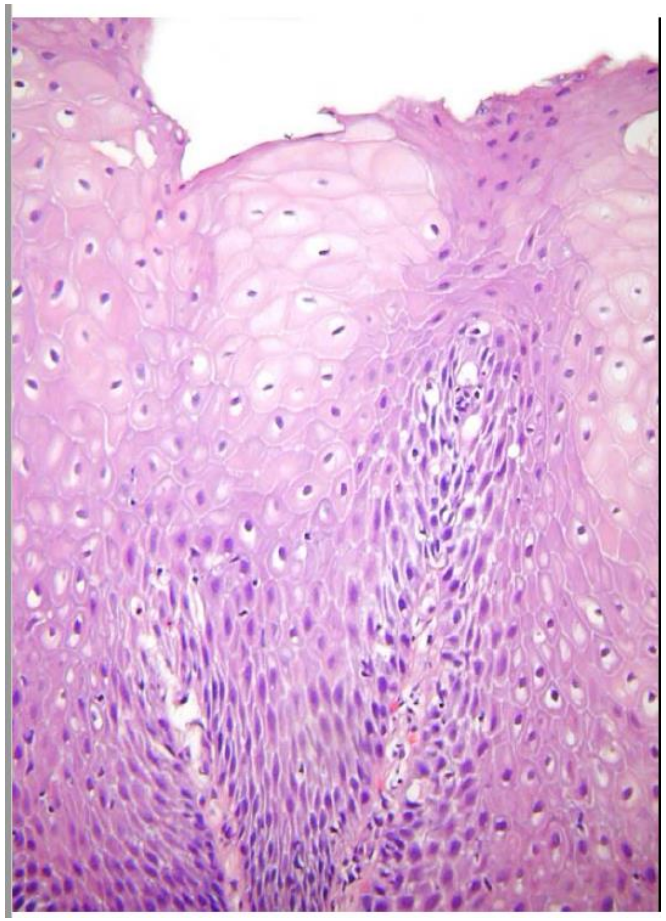
3. Abnormal histology

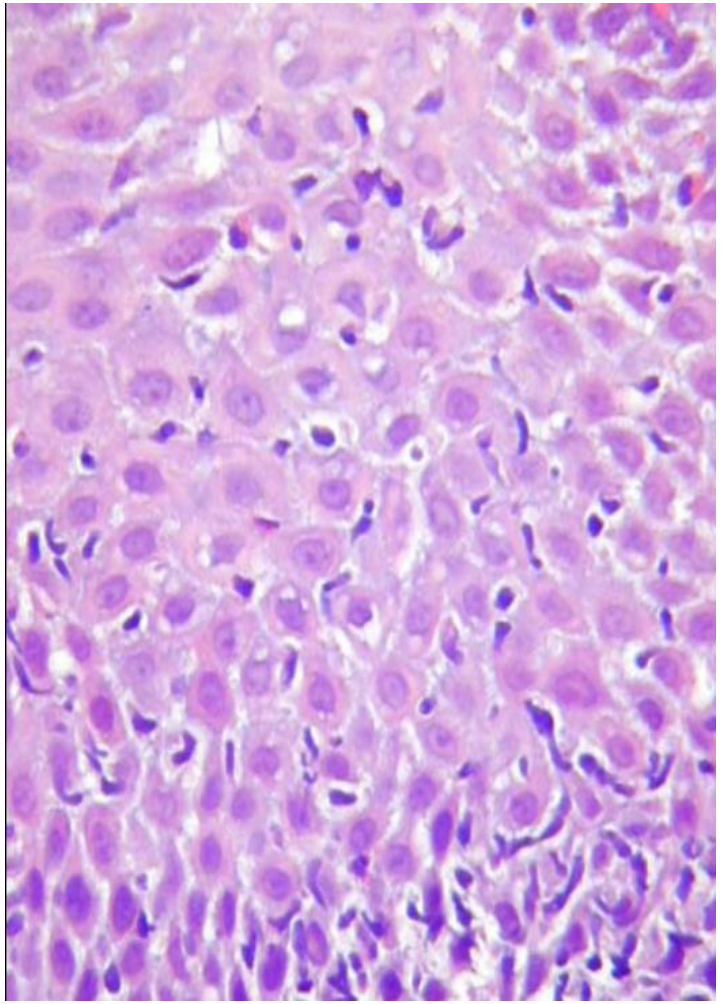
4. Diagnostic algorithms for most common abnormalities

Esophagus – what is normal?

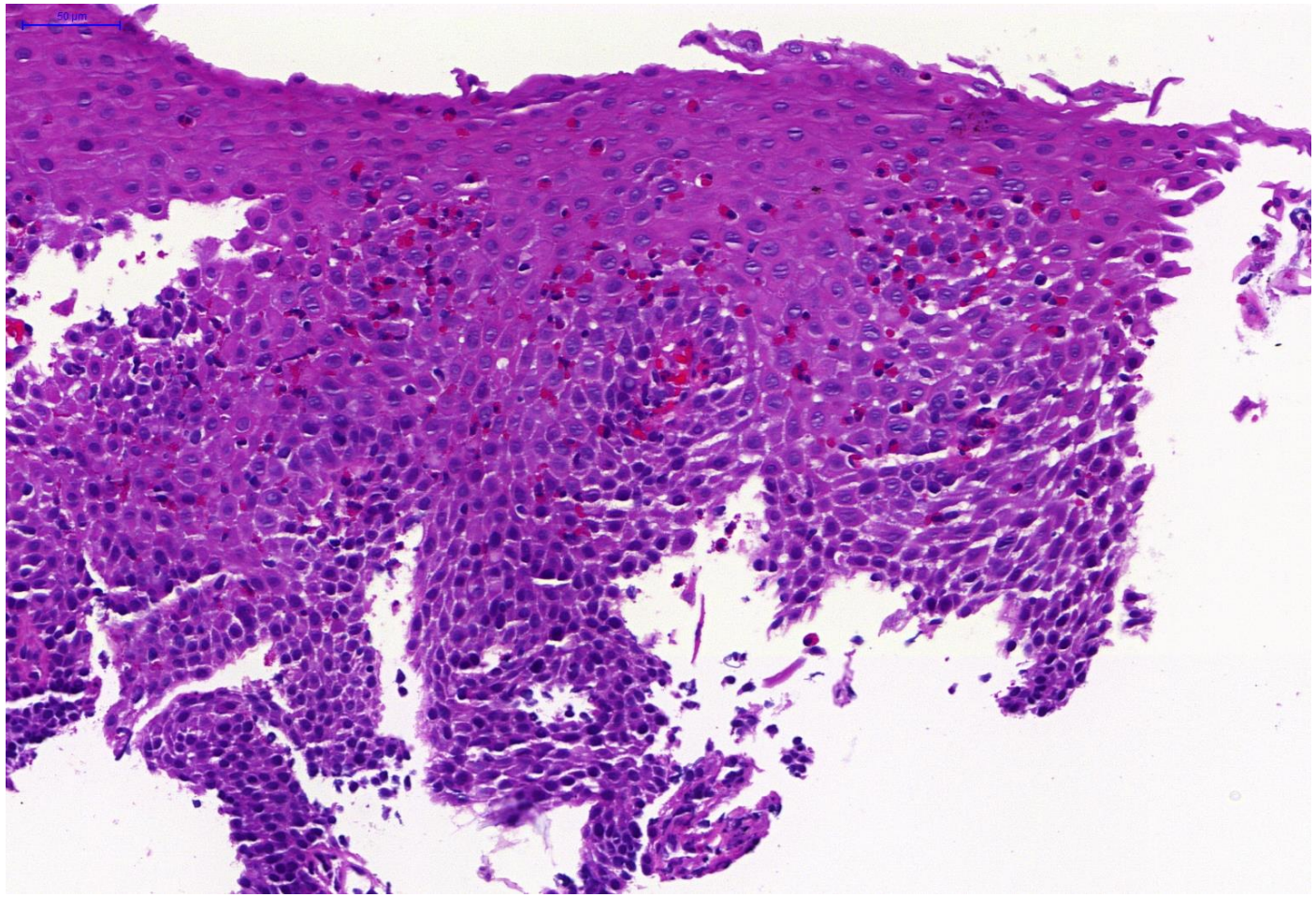


GERD – very common finding

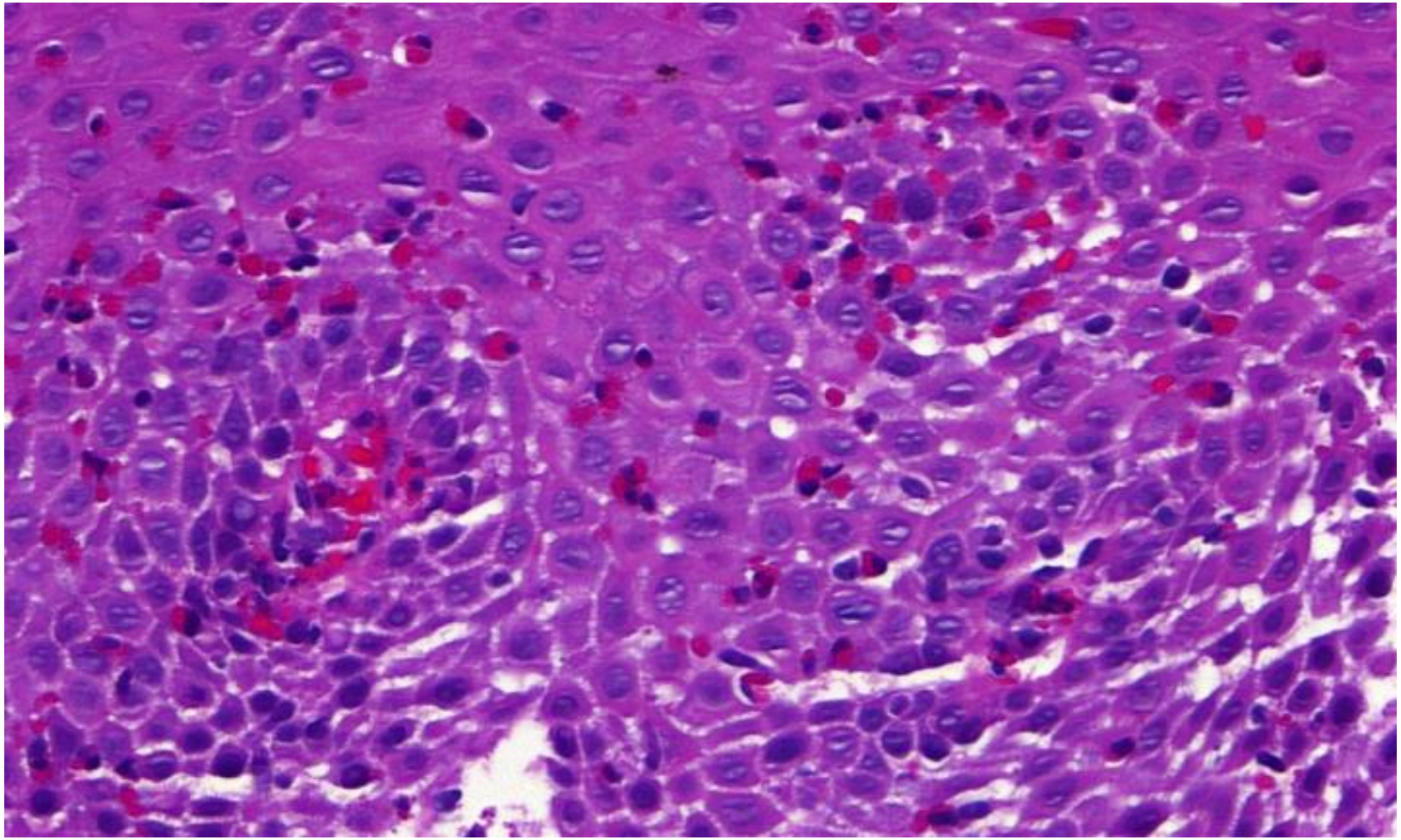




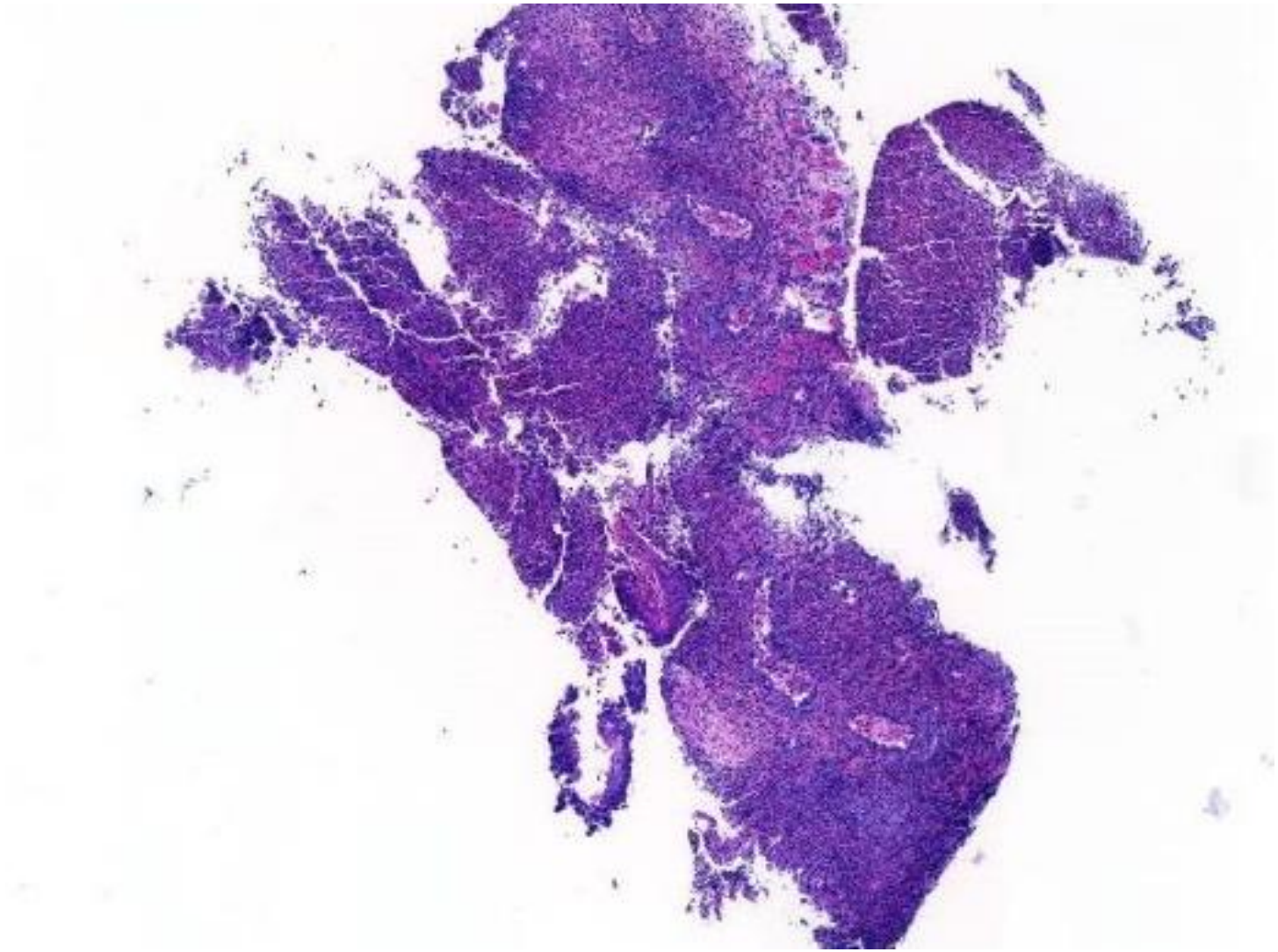
Esophagus – not so normal



EoE

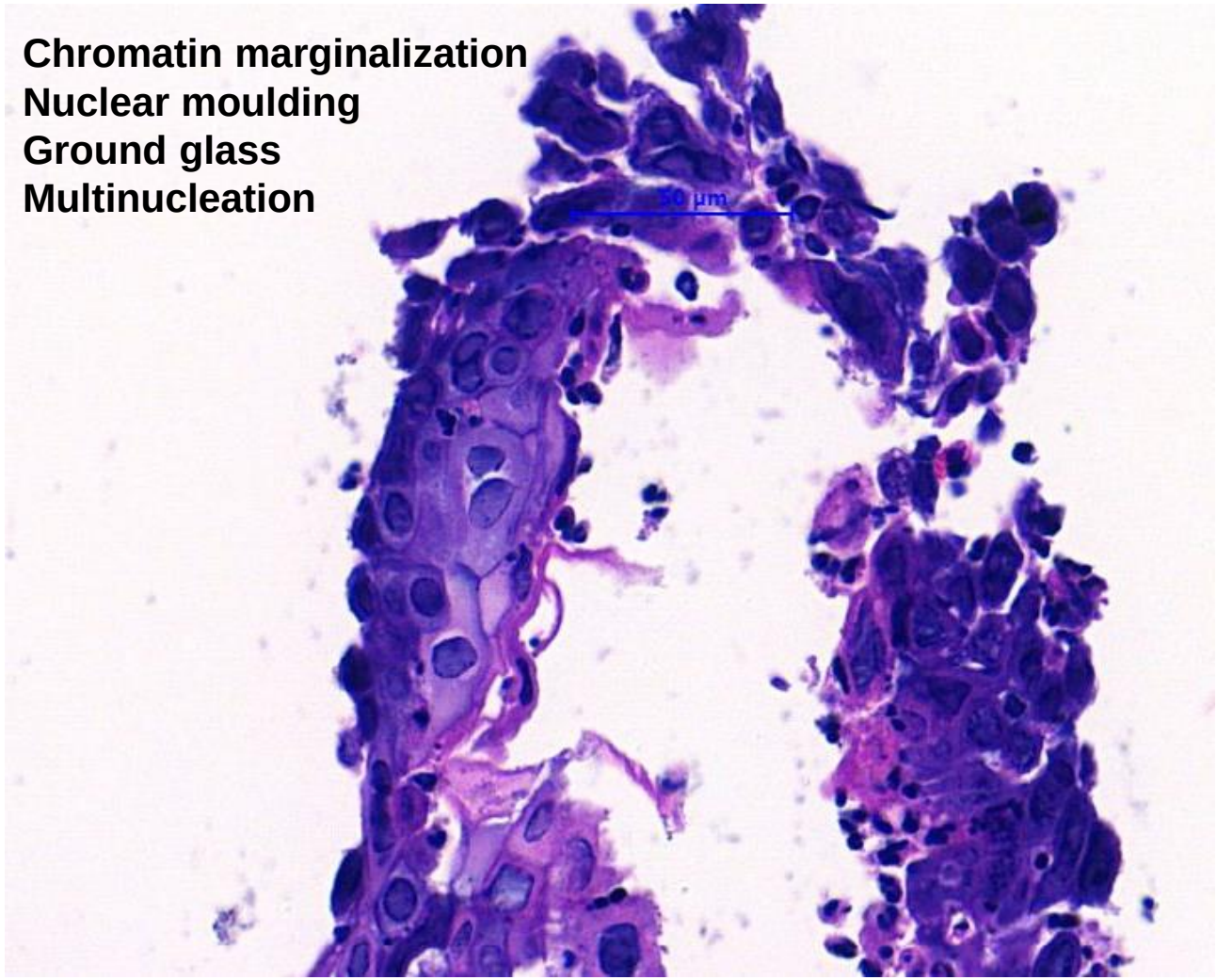


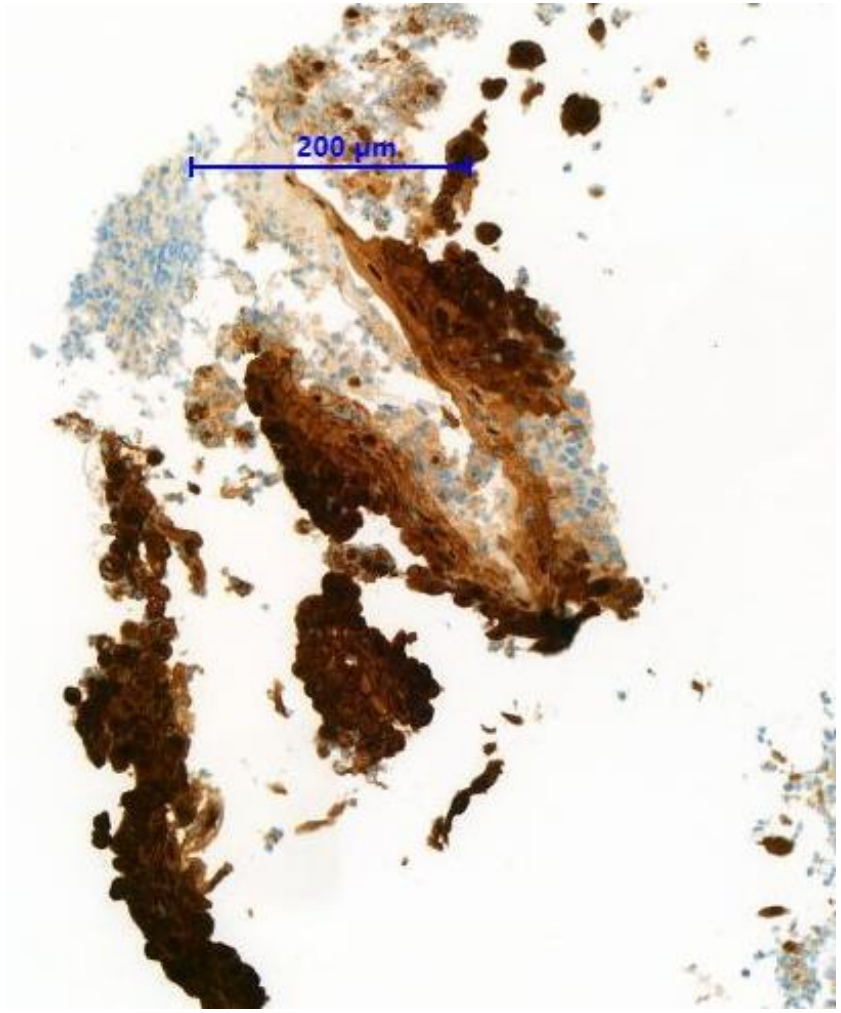
Esophageal ulcer



Typical changes

Chromatin marginalization
Nuclear moulding
Ground glass
Multinucleation





Diagnostic algorithm esophagitis

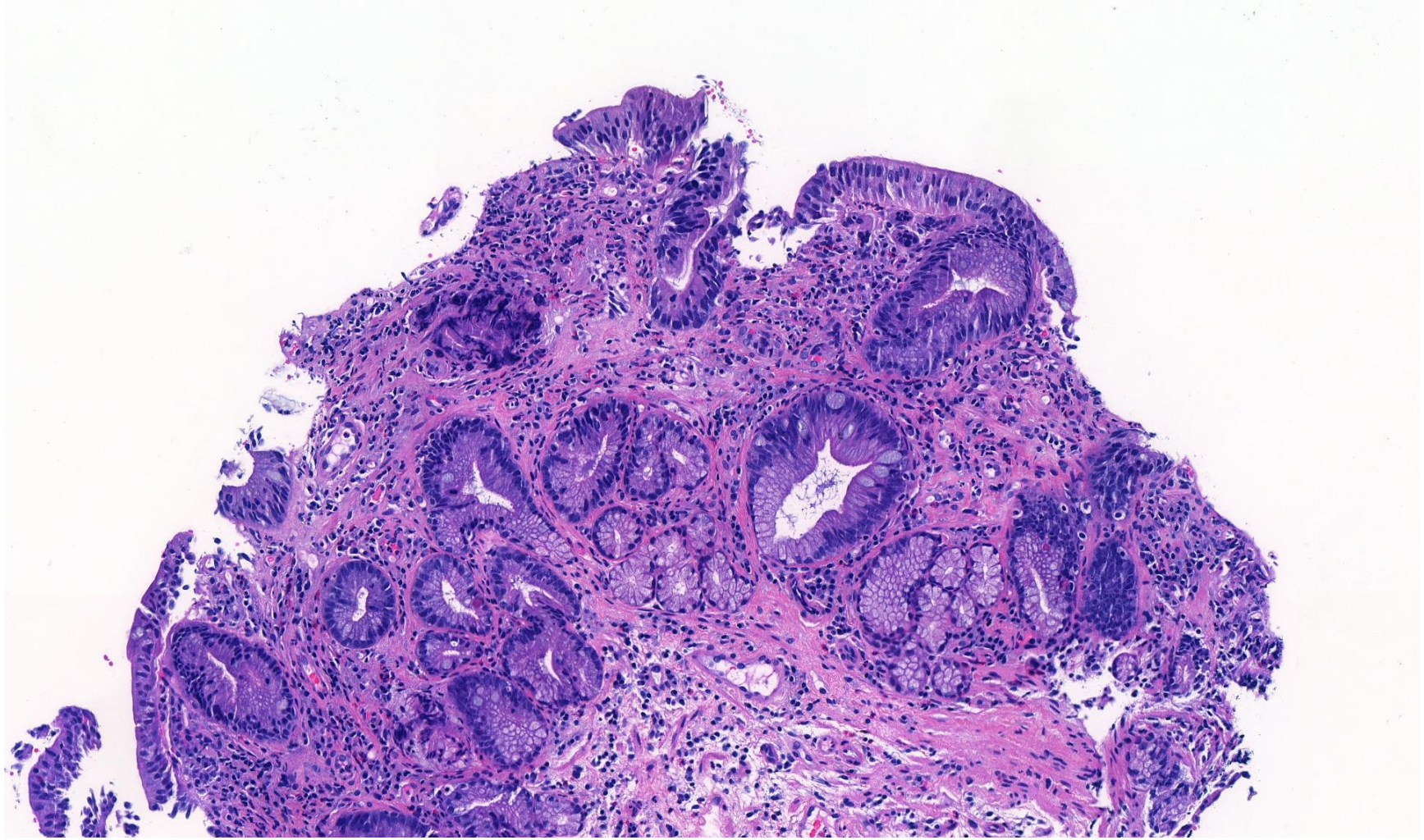
ESOPHAGITIS

GERD?

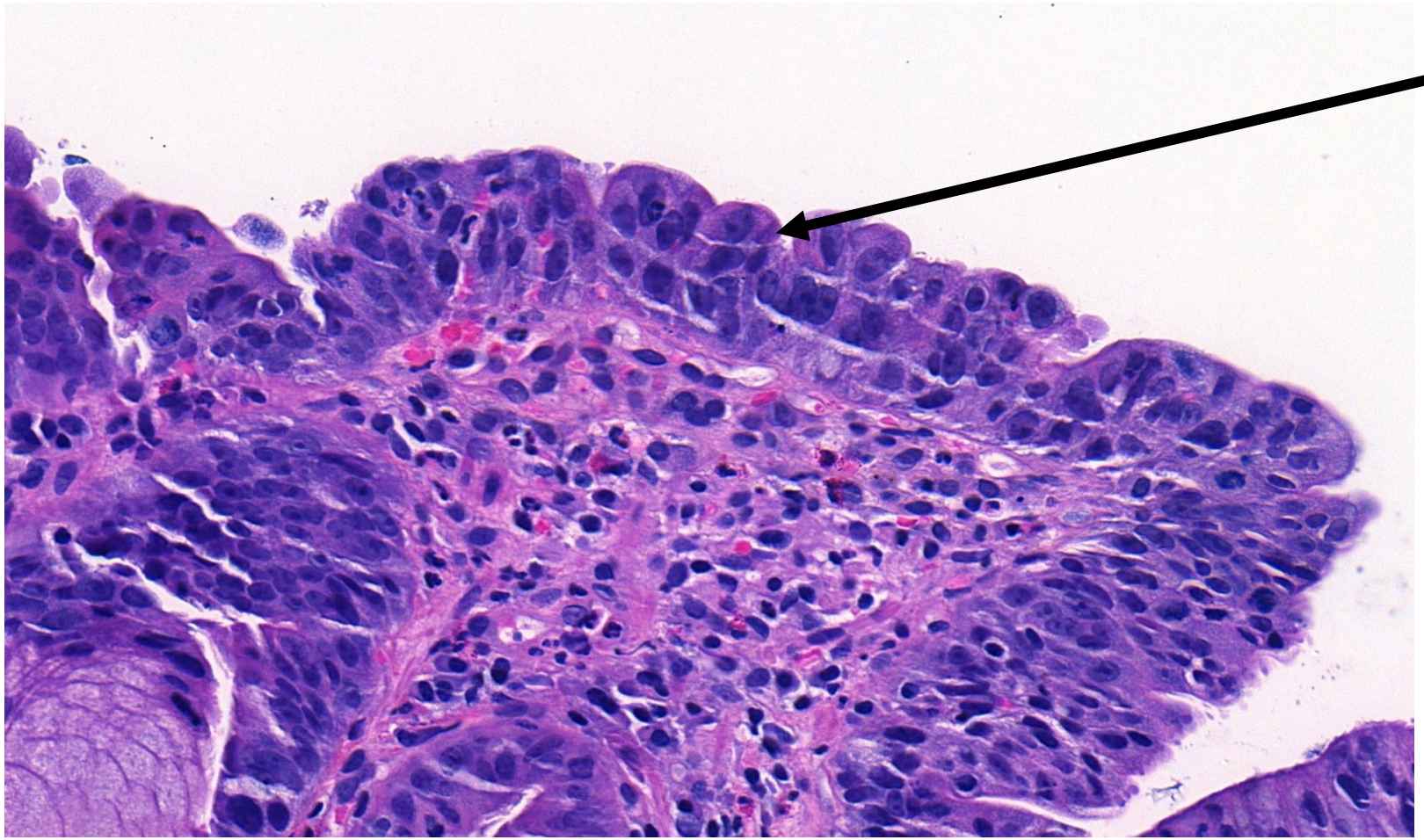
EoE/PPI-REE?

Erosions/ulcers	Lymphocytes ↑	Neutrophils ↑
- Viral esophagitis - Pill esophagitis - Autoimmune blistering dermatitis	- Lymphocytic esophagitis - Lichen planus	- Candida

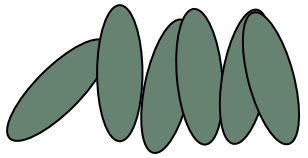
Barrett esophagus – definition?



Dysplasia in BE



Loss of polarity in HGD

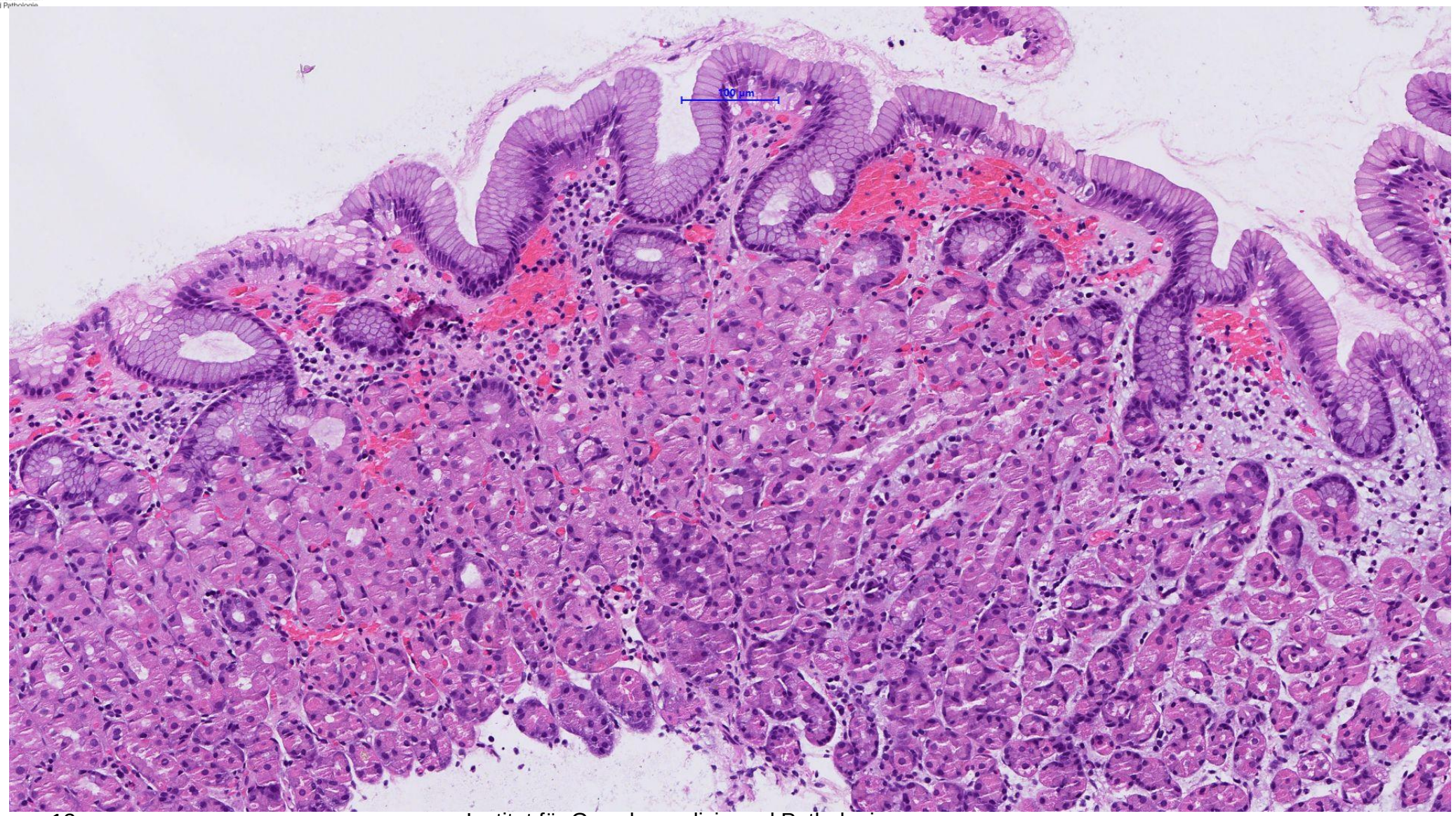


Stomach – what is normal

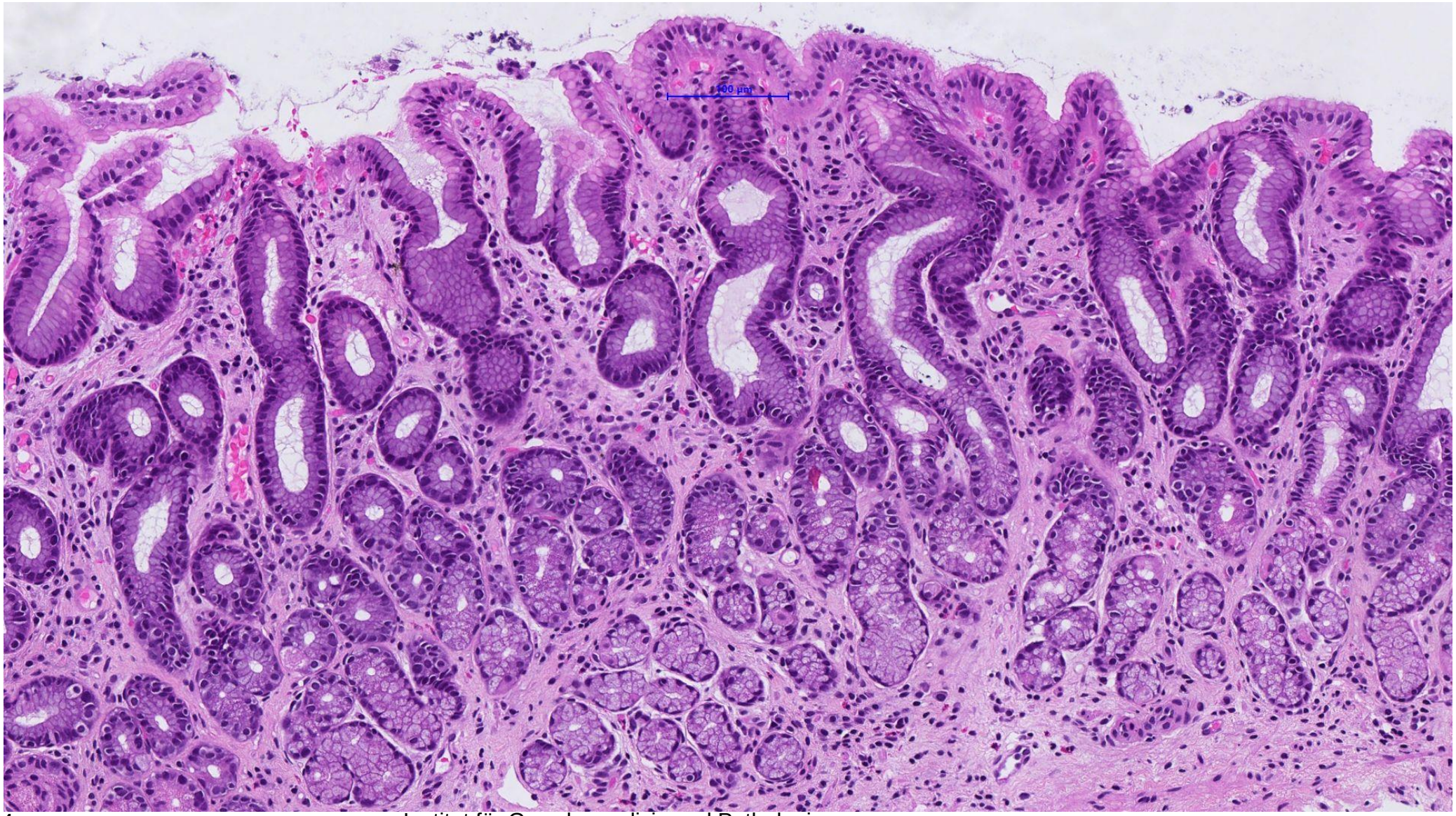
Types of gastric mucosa:

- Onxyntic mucosa
- Antrum type mucosa
- Cardia type mucosa

Normal oxyntic mucosa



Normal antral mucosa



Types of gastritis

Updated Sydney system for the classification and grading of gastritis

Type of gastritis	Etiologic factors	Gastritis synonyms
Nonatrophic	*Helicobacter pylori*	Superficial
	? Other factors	Diffuse antral gastritis (DAG)
		Chronic antral gastritis (CAG)
		Interstitial - follicular
		Hypersecretory
		Type B*
Atrophic		
Autoimmune	Autoimmunity	Type A*
		Diffuse corporal
		Pernicious anemia-associated
Multifocal atrophic	*Helicobacter pylori*	Type B*, type AB*
	Dietary	Environmental
	? Environmental factors	Metaplastic
Special forms		
Chemical[1]	Chemical irritation	Reactive
	Bile	Reflux
	NSAIDs	NSAID
	? Other agents	Type C*
Radiation	Radiation injury	
Lymphocytic	Idiopathic? Immune mechanisms	Varioliform (endoscopic)
	Gluten	Celiac disease-associated
	Drug (ticlopidine)	
	? *H. pylori*	
Noninfectious granulomatous	Crohn's disease	
	Sarcoidosis	
	Granulomatosis with polyangiitis and other vasculitides	
	Foreign substances	
	Idiopathic	Isolated granulomatous
Eosinophilic	Food sensitivity	Allergic
	? Other allergies	
Other infectious gastritides	Bacteria (other than *H. pylori*)	Phlegmonous
	Viruses	
	Fungi	
	Parasites	

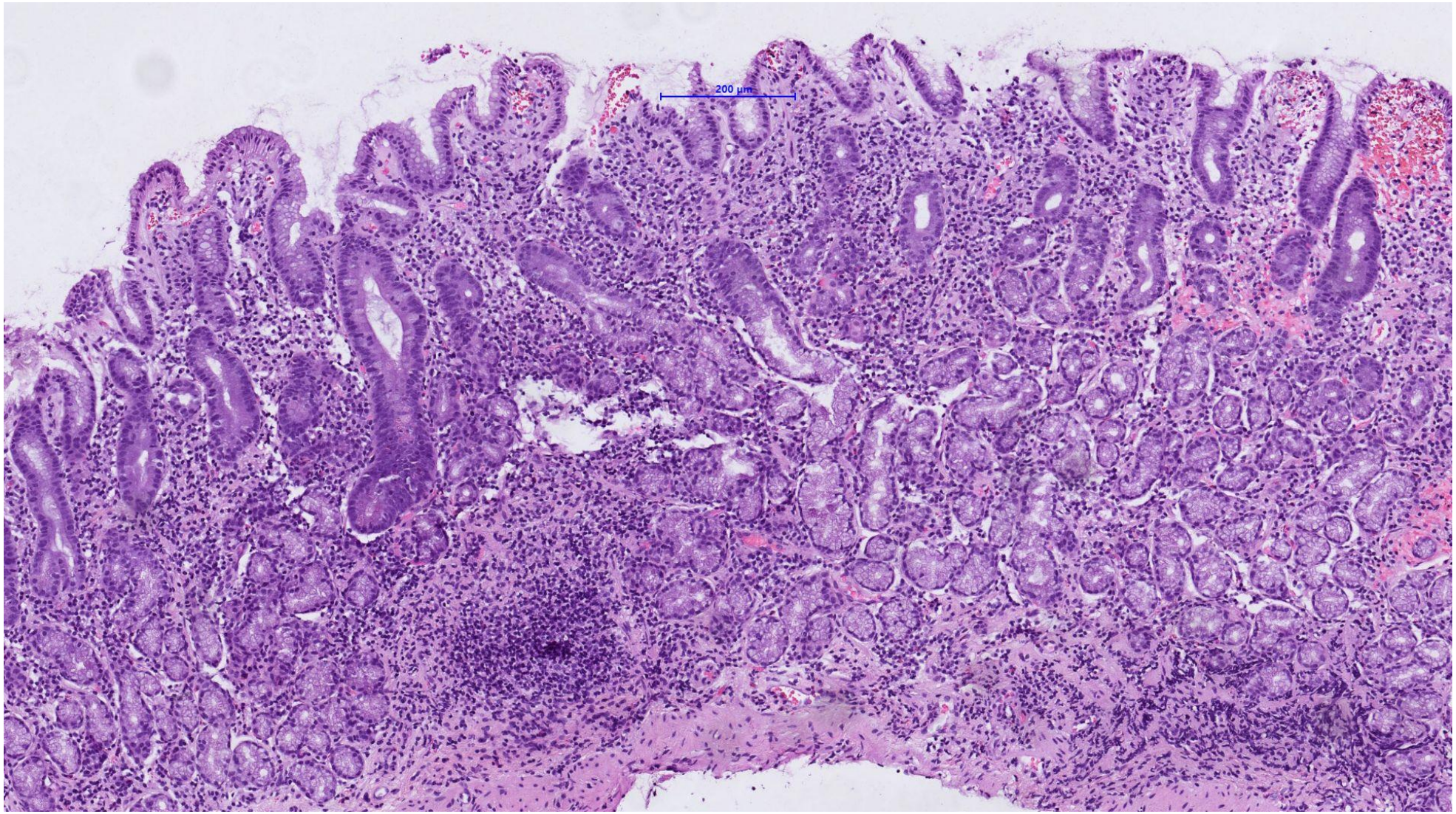
The updated Sydney system. Am J Surg Pathol 1996; 20:1161.

Chronic inflammation → plasma cells

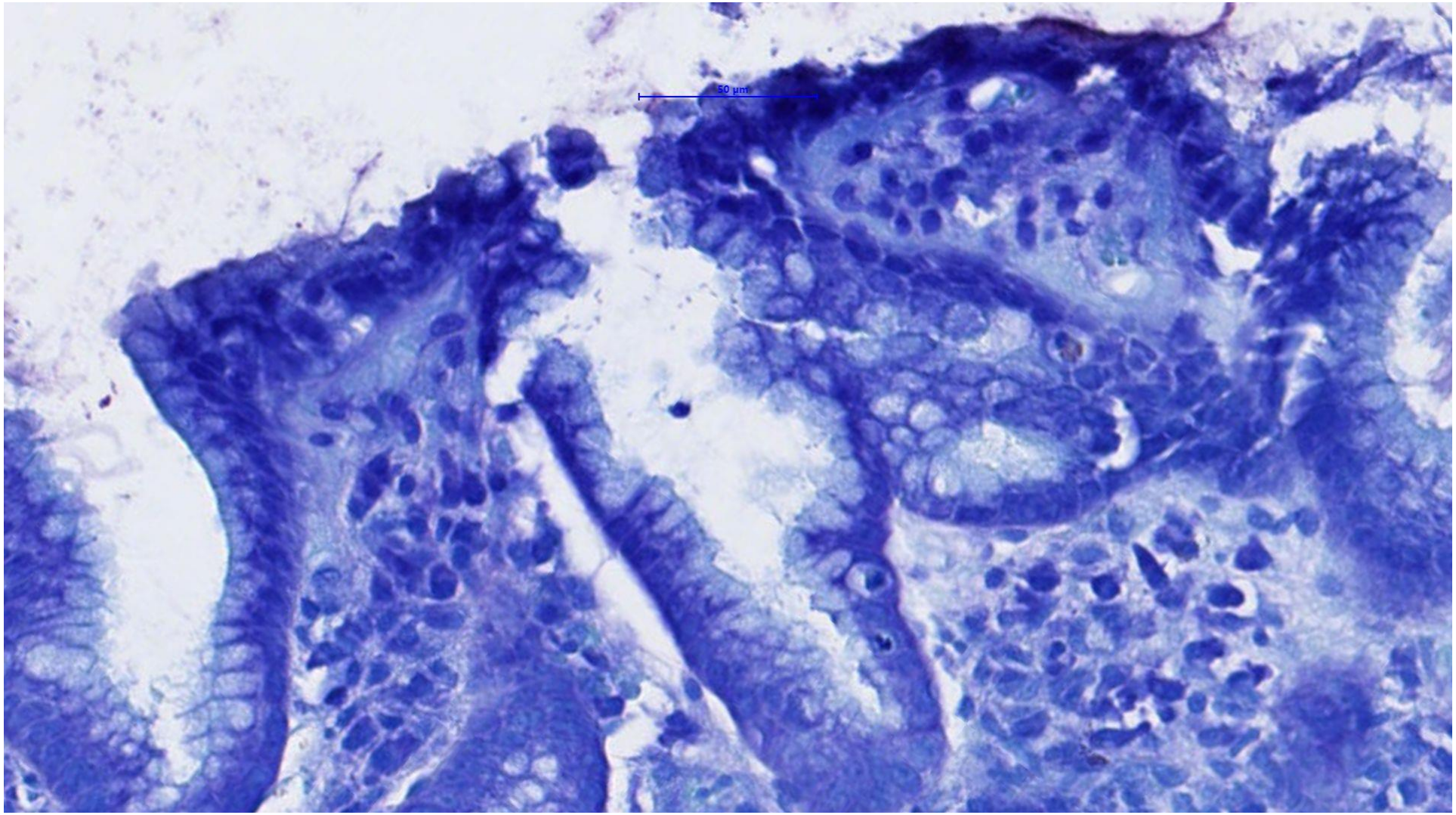
Active inflammation → neutrophils

Atrophy → loss or replacement of resident glands by metaplastic epithelium

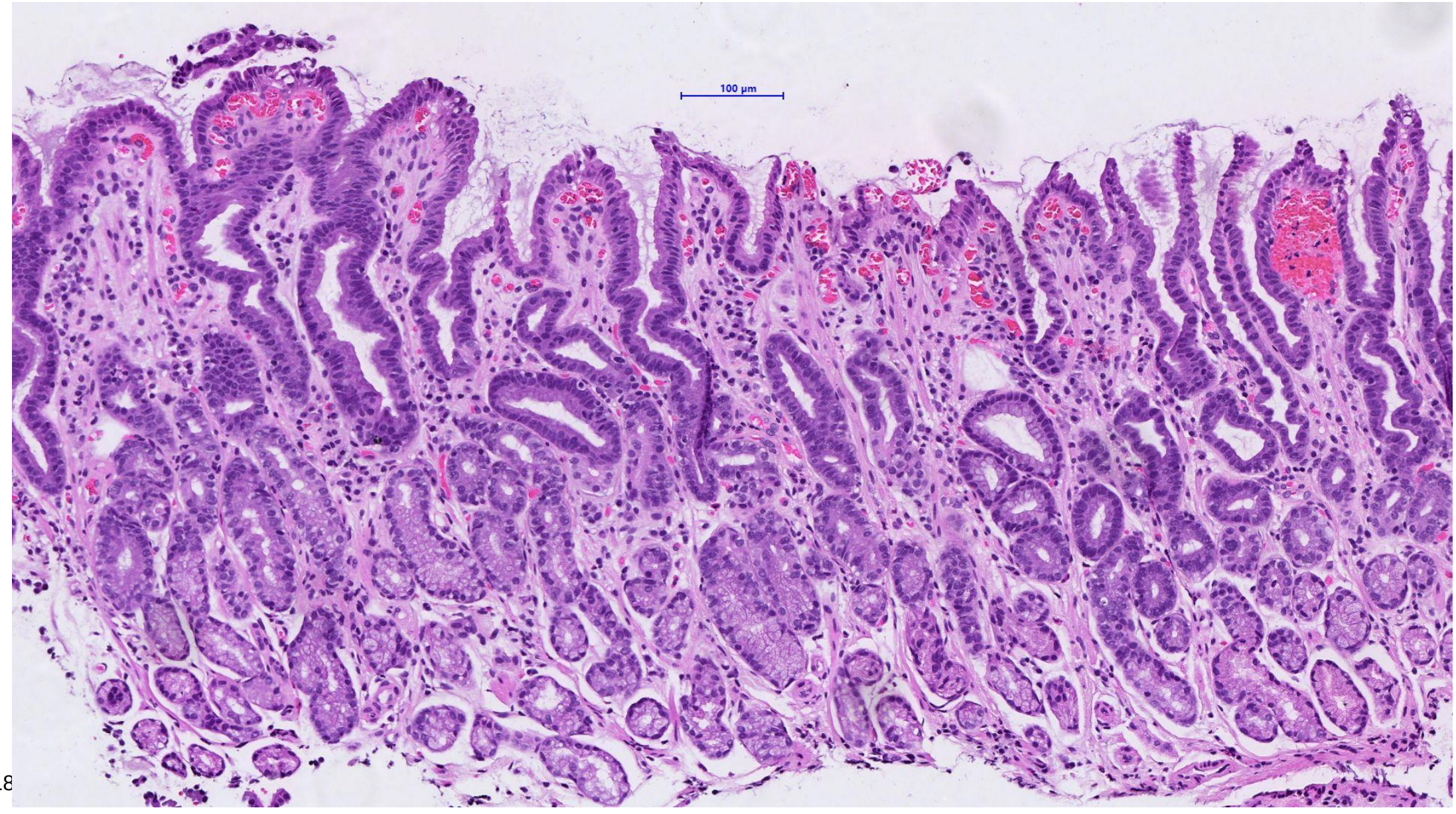
H. pylori gastritis



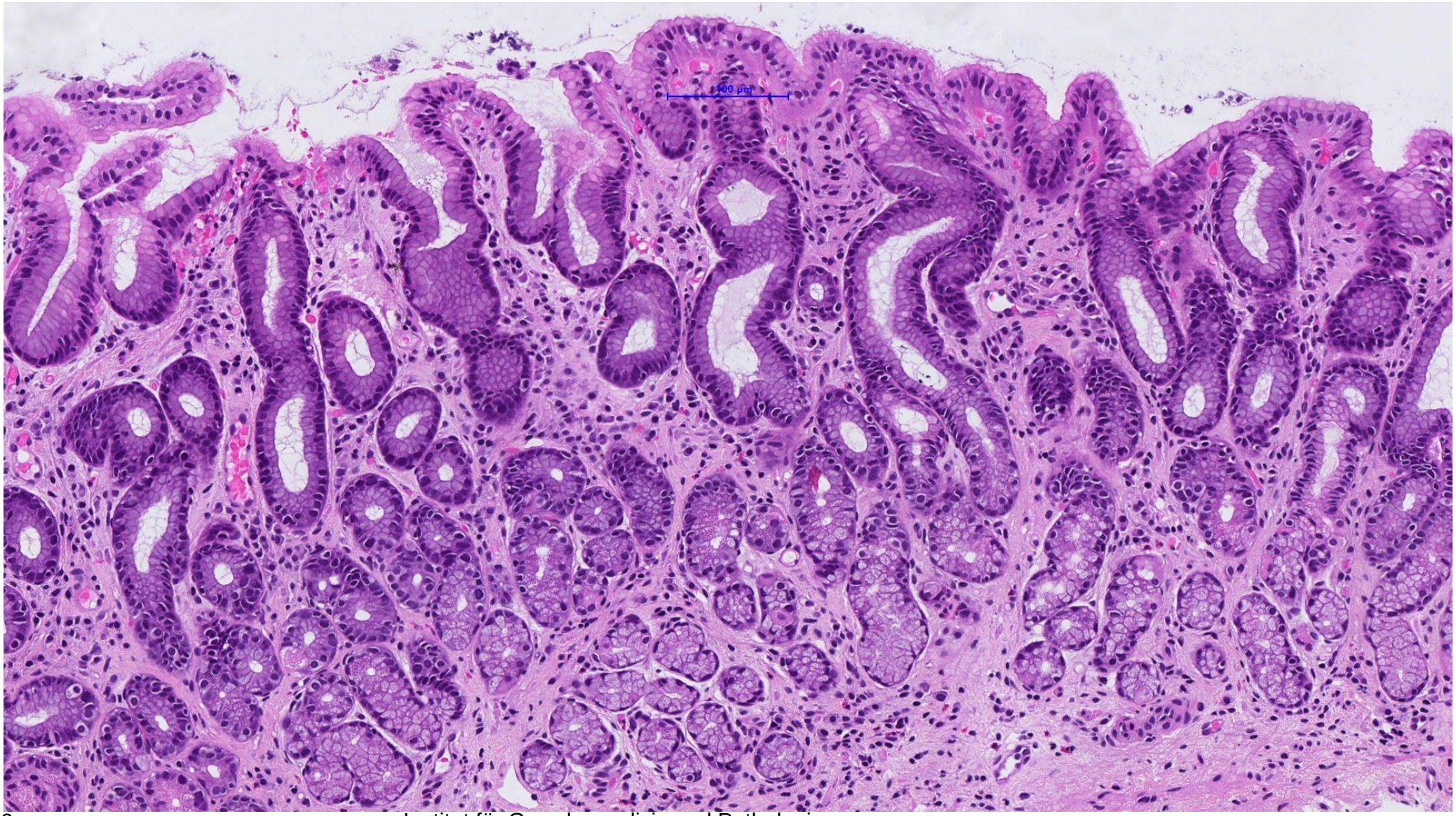
H. pylori bacteria



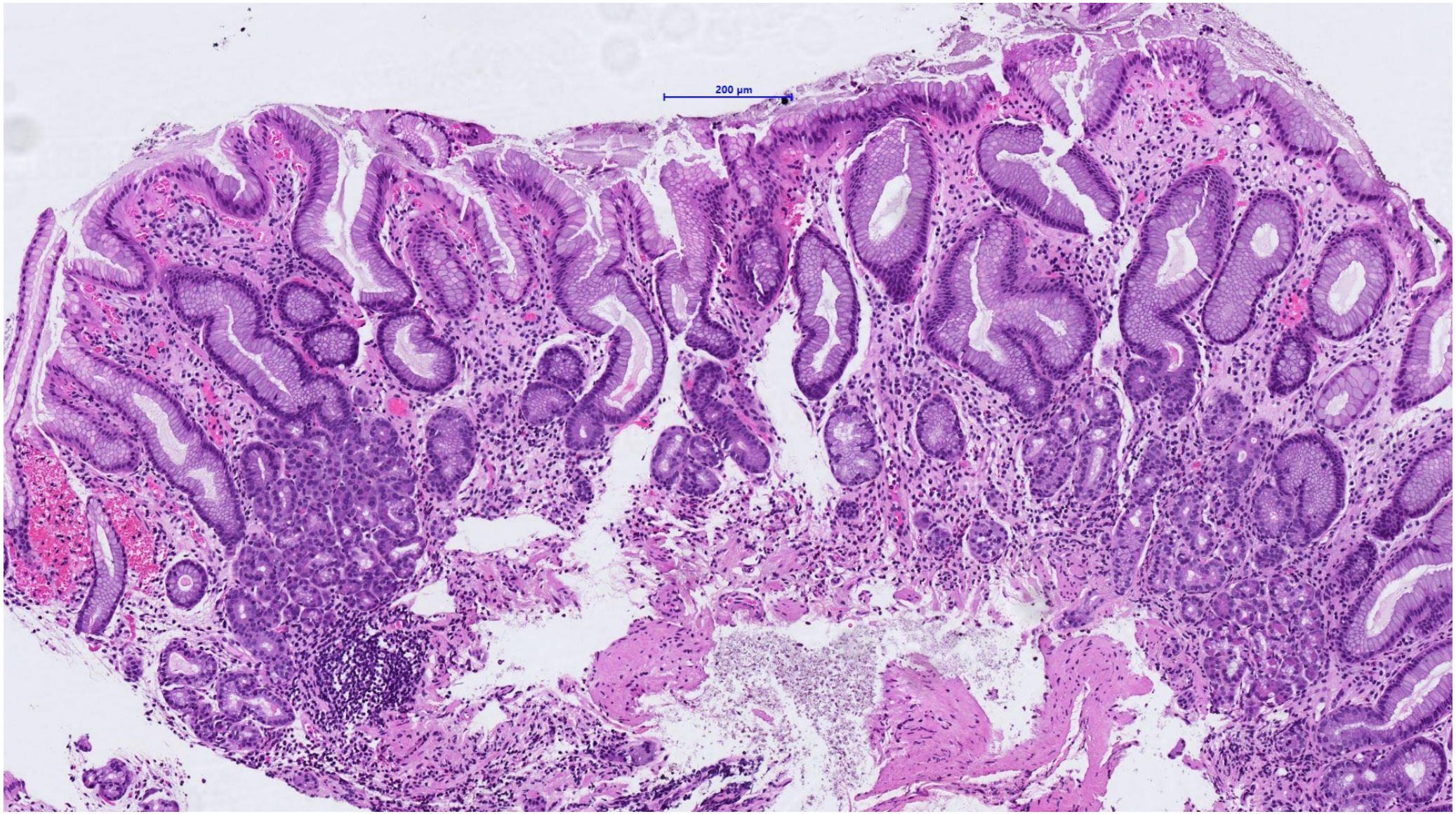
Reactive gastropathy



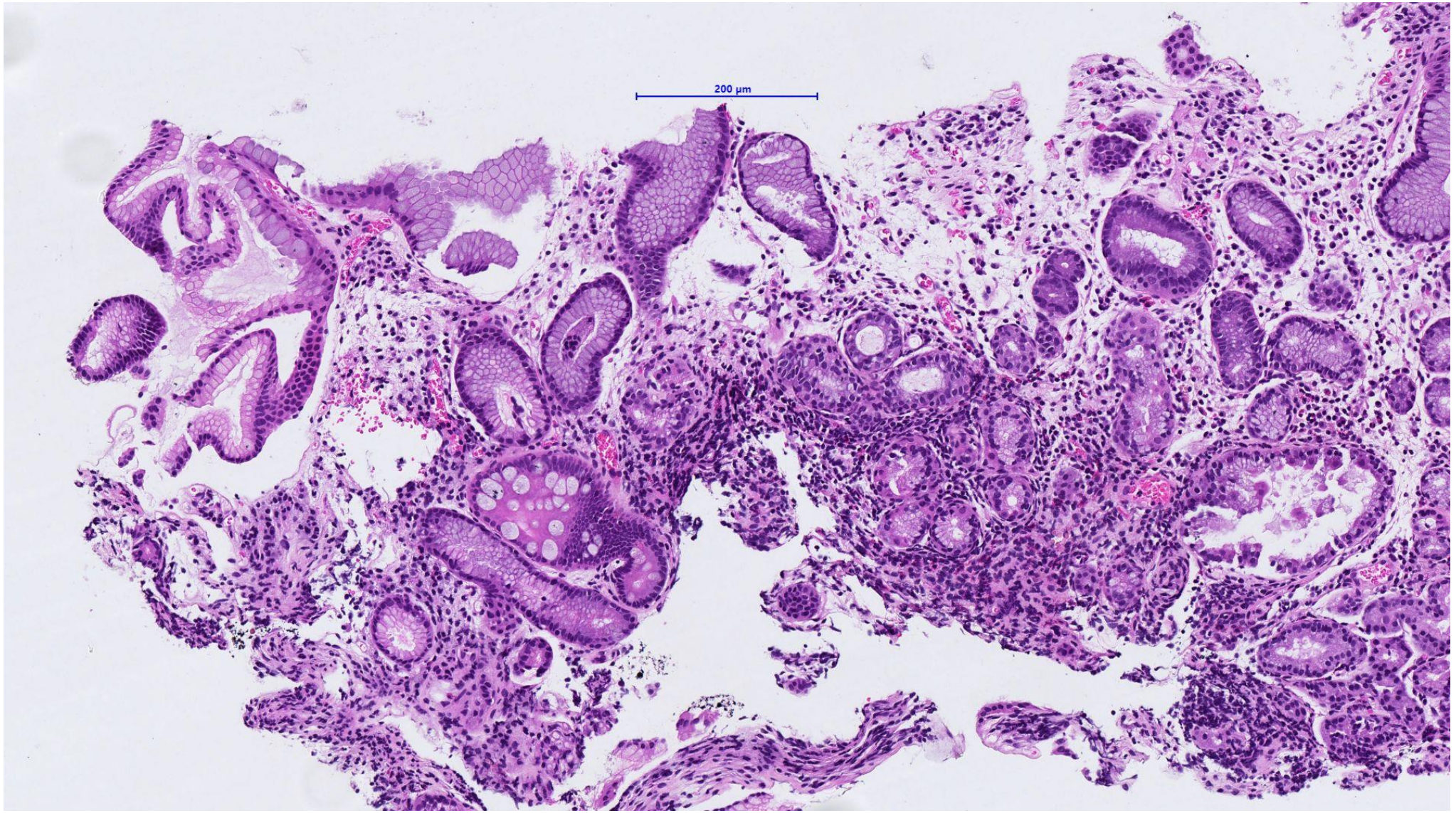
Reminder: normal antral mucosa



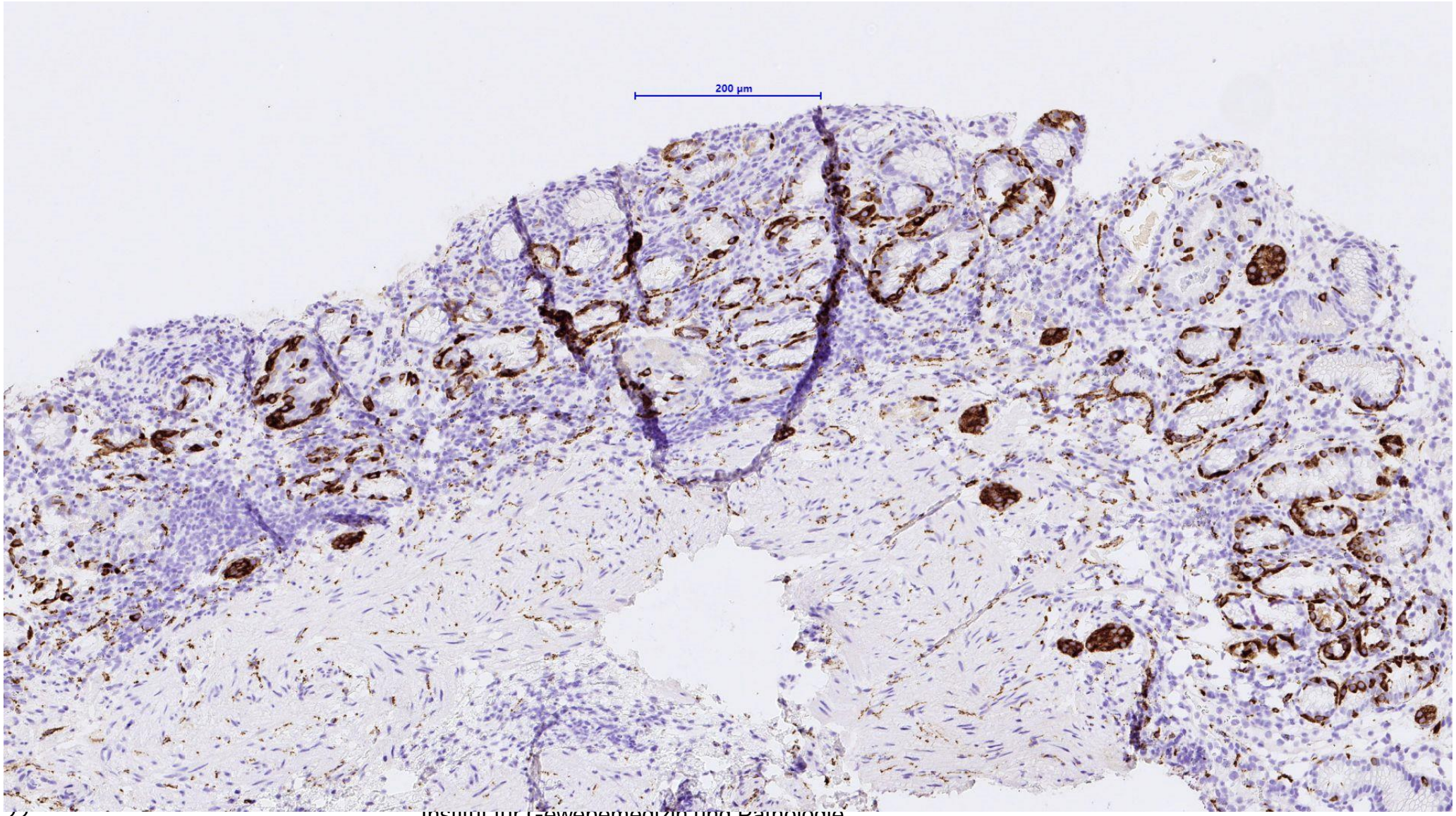
Autoimmune-type gastritis



Focal intestinal metaplasia



Synaptophysin: ECL cell hyperplasia



Duodenum – what is normal

‘Checklist’:

- Are the villi normal? Crypts hyperplastic?
- Are there any microorganisms between the villi?
- IELs?
- What inflammatory cells are in the lamina propria? Plasma cells present?
- Anything special (reactive changes, apoptosis)?
- PAS stain → gastric metaplasia, M. whipple, MAI?

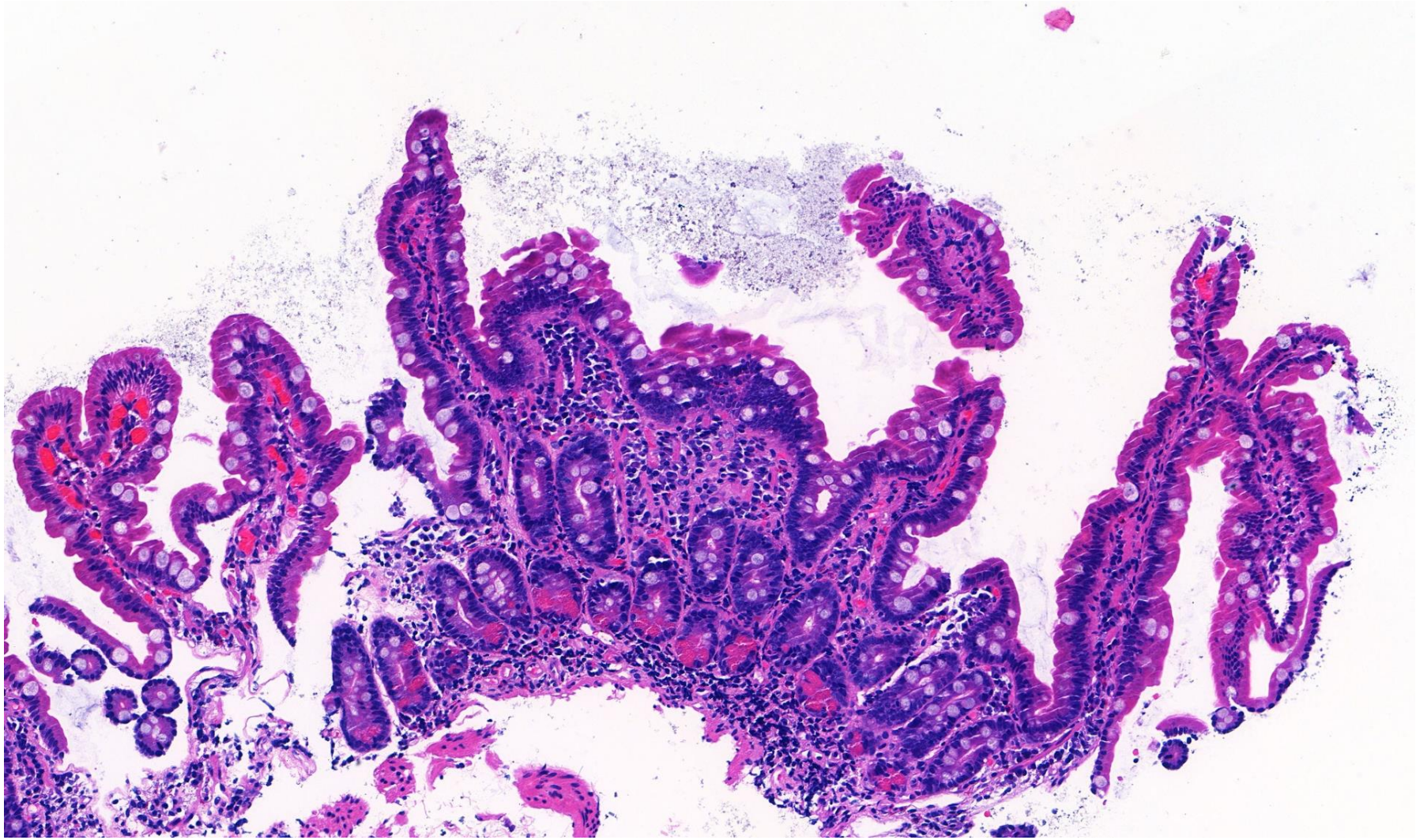
Grading of duodenal lesions with villous atrophy

Table 21.1 Grading of gluten-induced enteropathy: modified Oberhuber–Marsh scheme

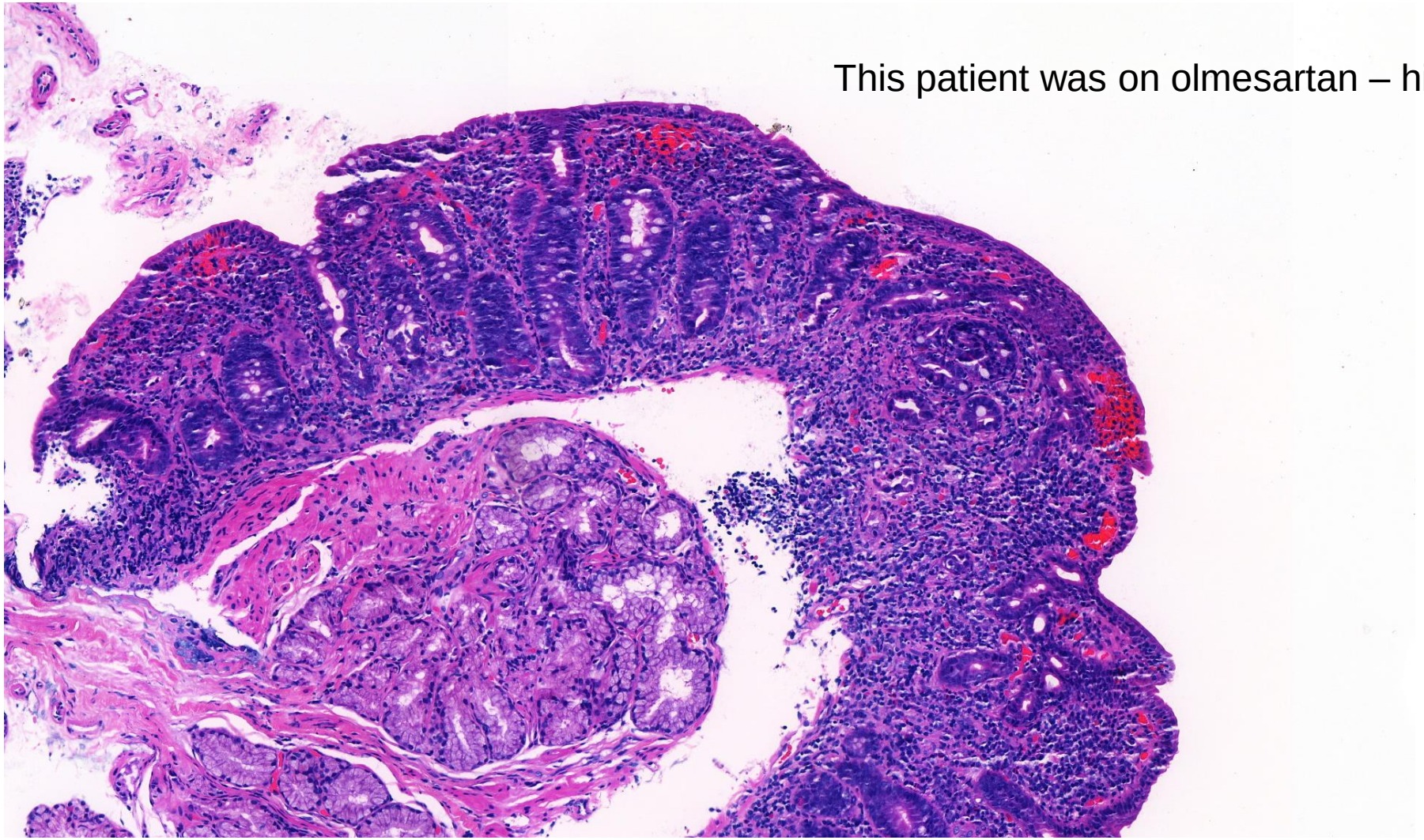
	0	1	2	3a	3b	3c
IELs	<30	>30	>30	>30	>30	>30
Crypts	Normal	Normal	Hypertrophic	Hypertrophic	Hypertrophic	Hypertrophic
Villi	Normal	Normal	Normal	Atrophy +	Atrophy ++	Absent

IELs, intra-epithelial lymphocytes.

Normal small bowel mucosa

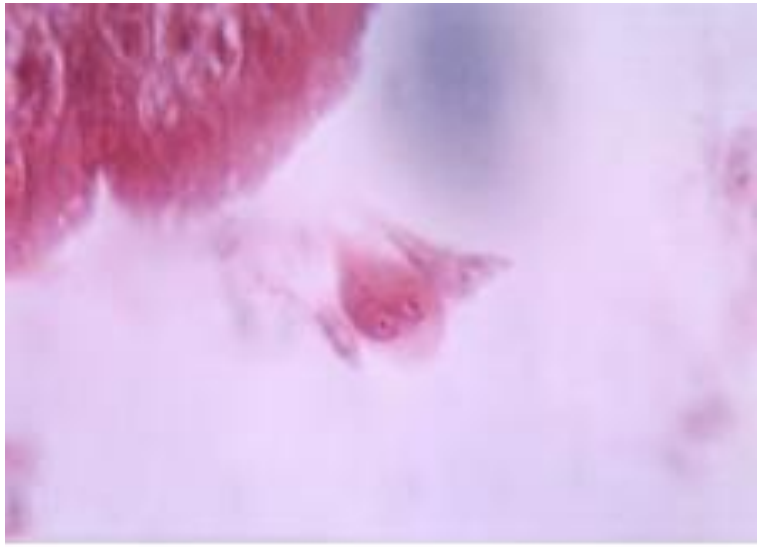


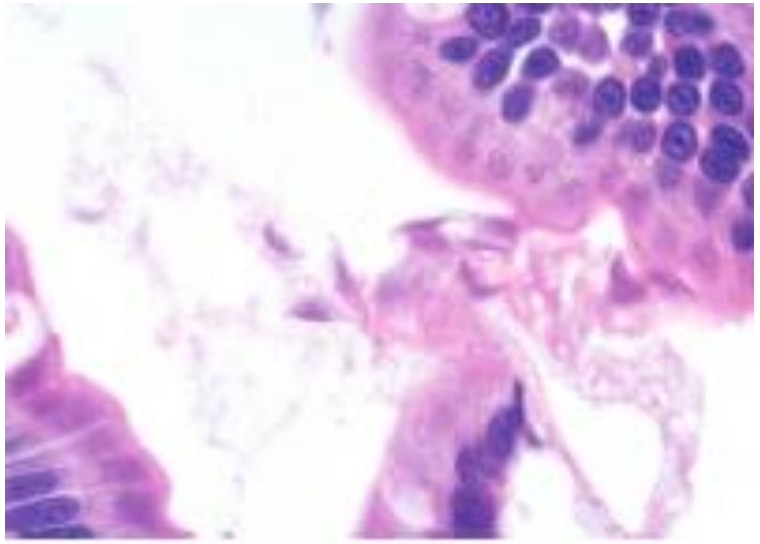
Marsh 3c lesion



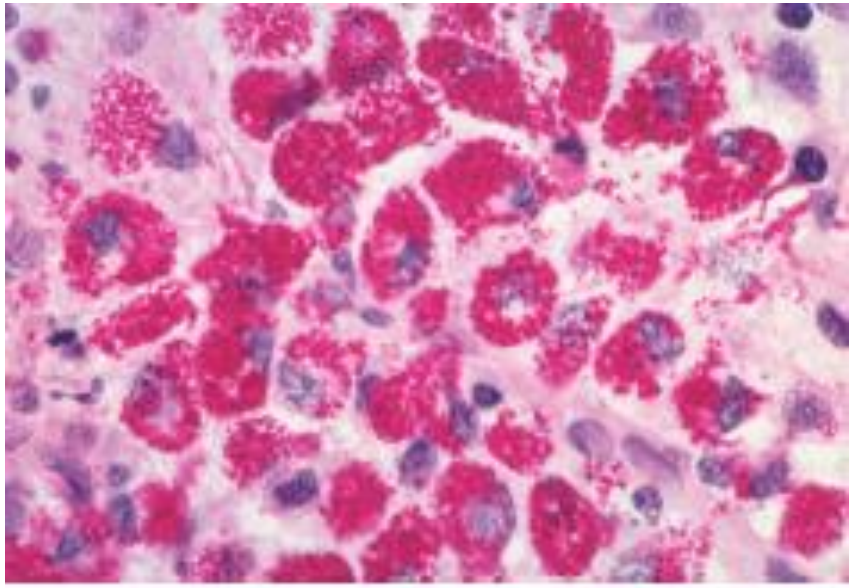
This patient was on olmesartan – histology could be CD!

Giardia

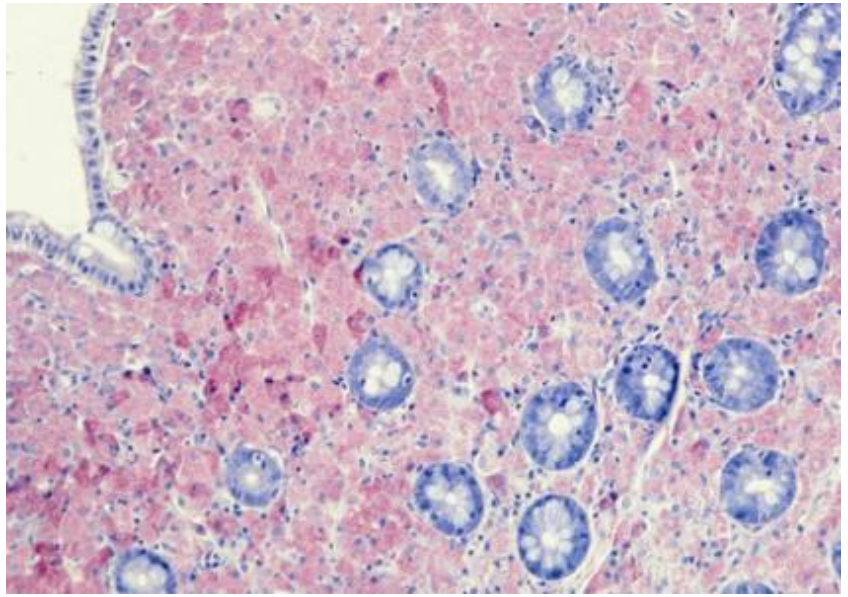




DDs in PAS



Whipple’s disease: PAS+ Granula



MAI: PAS+ rods

Normal colorectal mucosa

Similar ‘Checklist’ as in small bowel:

- Architecture of the crypts?
- Surface epithelium – bugs or damage? IELs?
- Subepithelial collagen deposition?
- What inflammatory cells are in the lamina propria? Plasma cells present?
- What is the distribution of inflammatory cells?
- Anything special – reactive changes, apoptosis, granulomas?

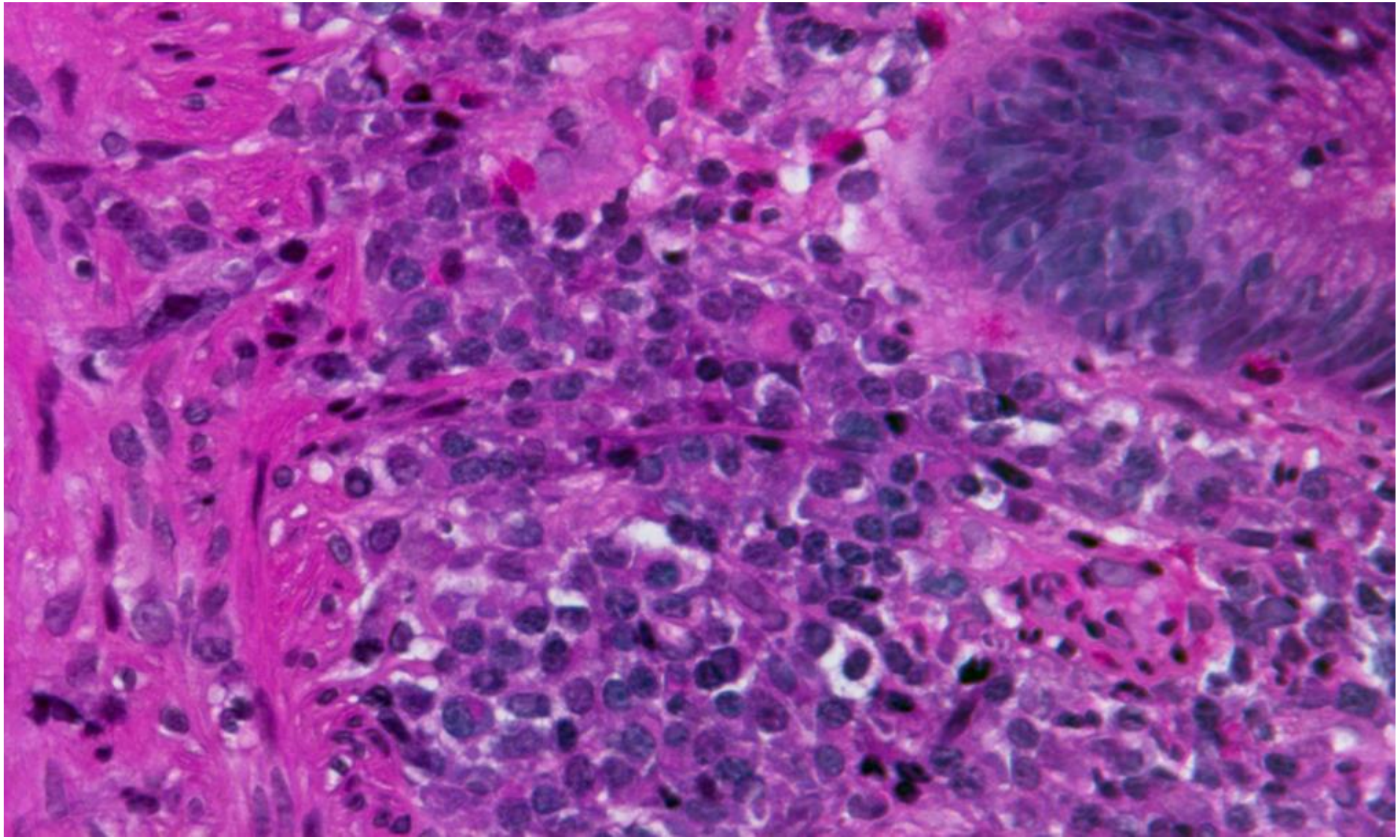
Normal colorectal mucosa

Spirochetosis – a potential miss

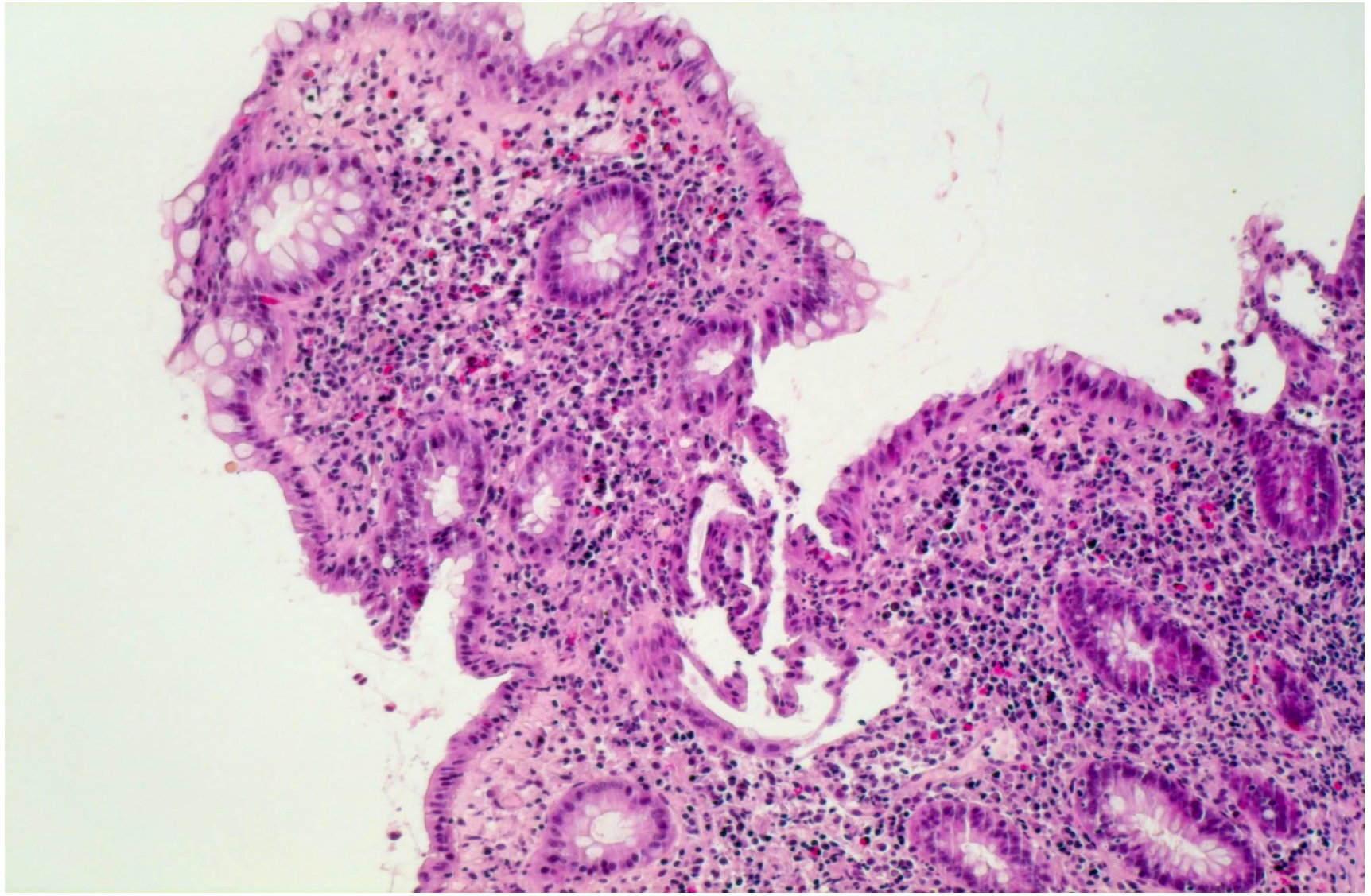
Diagnosis of IBD

Feature	UC	CD	Infectious/acute self-limited colitis
Diffuse	Yes	Sometimes	Sometimes
Focal	No	Usually	Usually
Luminal surface	Irregular	Sometimes	Regular
Crypt abscesses cryptitis	Yes, lots	Yes, focal	Yes, luminal
Mucin depletion	Diffuse	Focal	Absent or focal
Basal plasmocytosis	**Yes**	**Yes**	**Absent**
Neutros in lamina propria	**No**	**No**	**Yes**

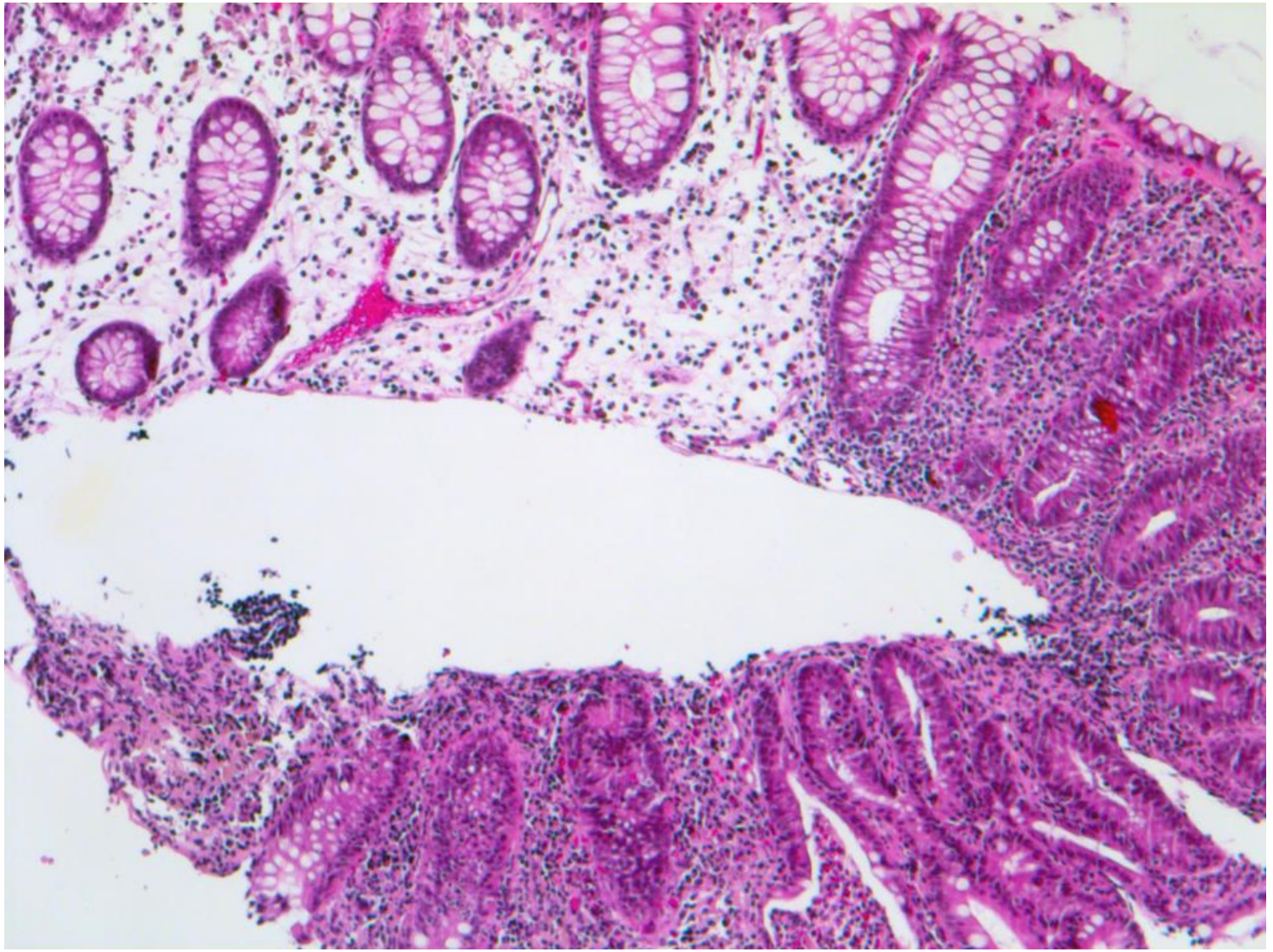
Basal plasma cells



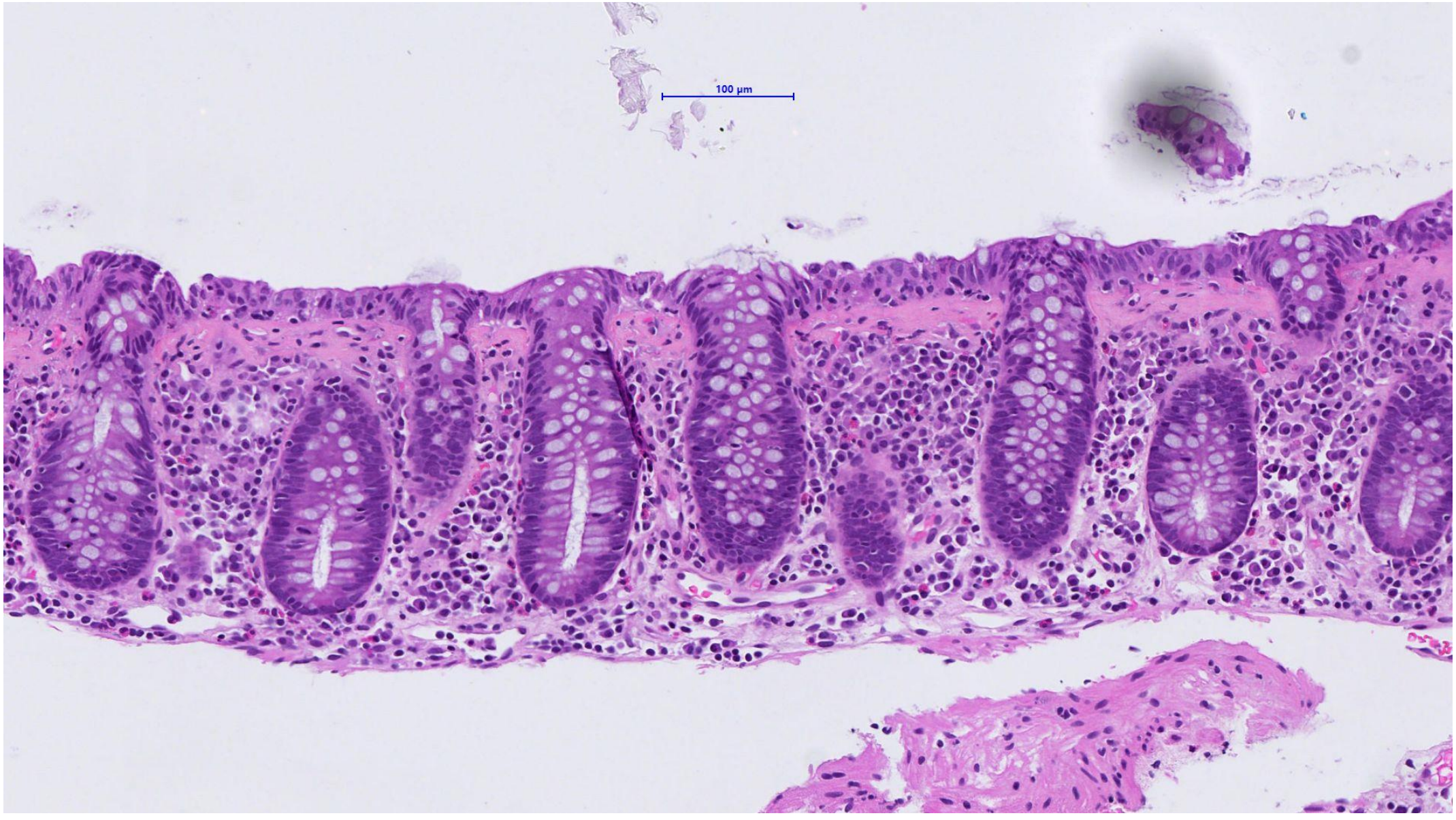
UC: diffuse chronic active pattern



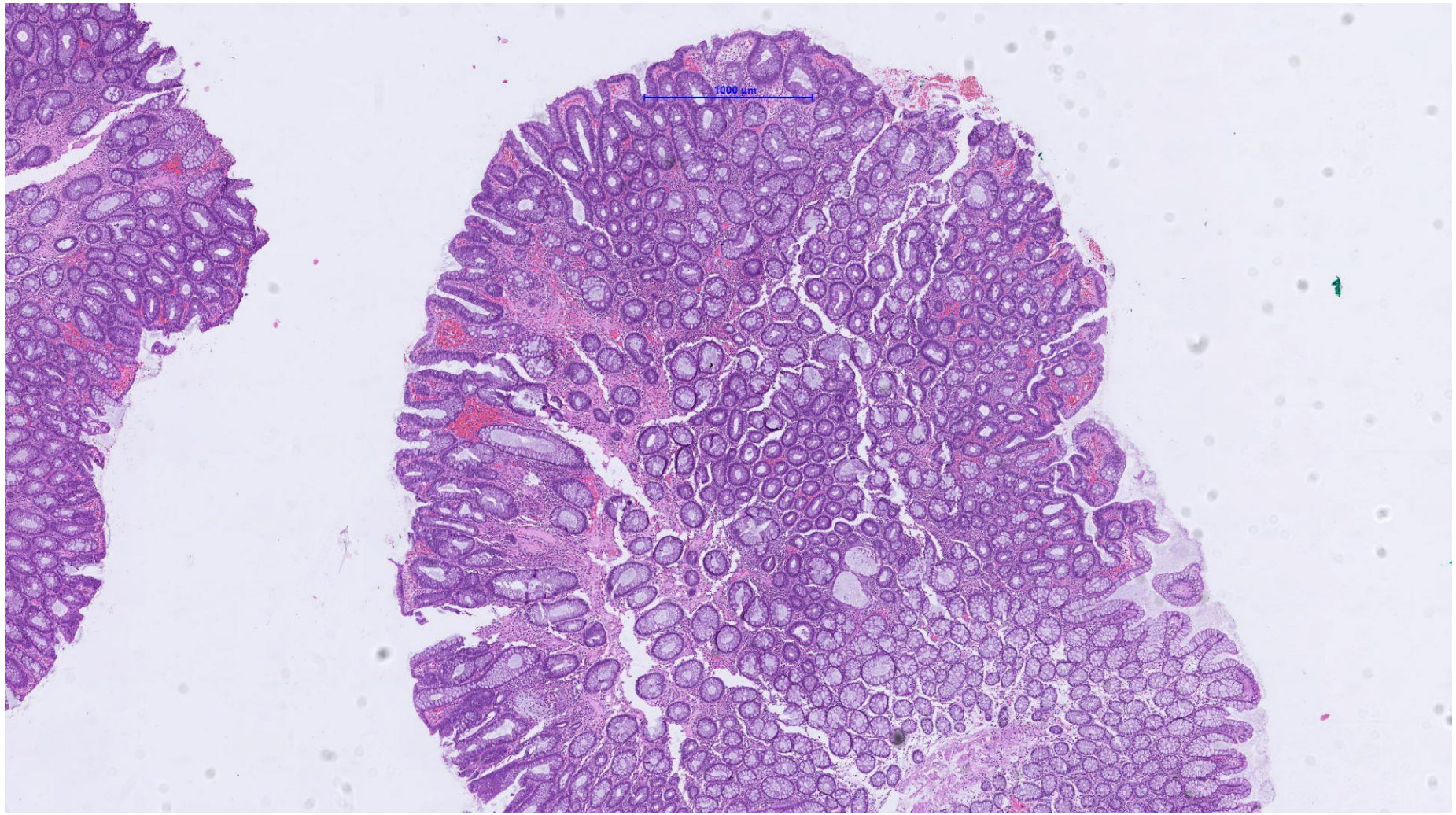
CD: patchy chronic active pattern



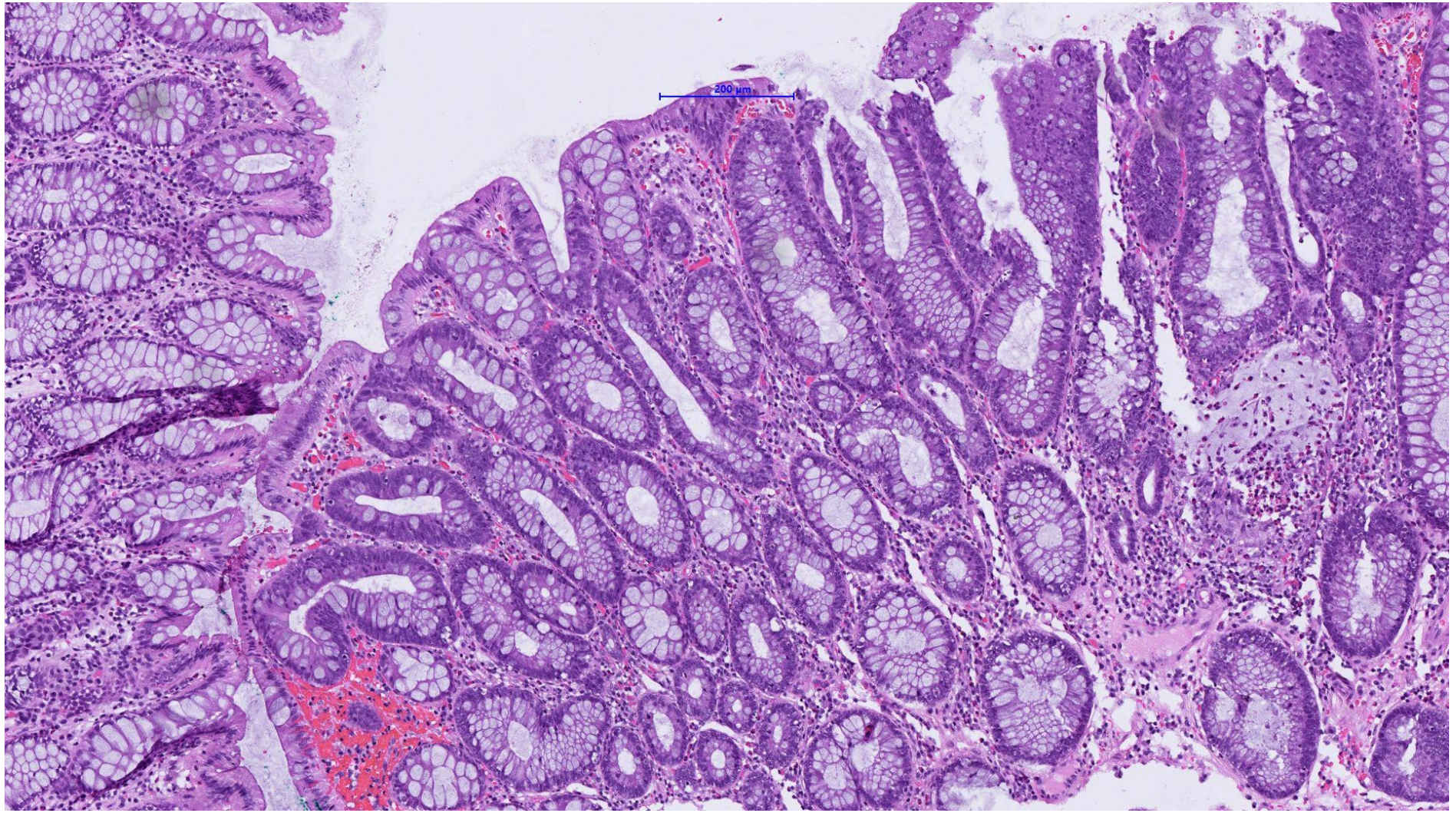
Collagenous colitis



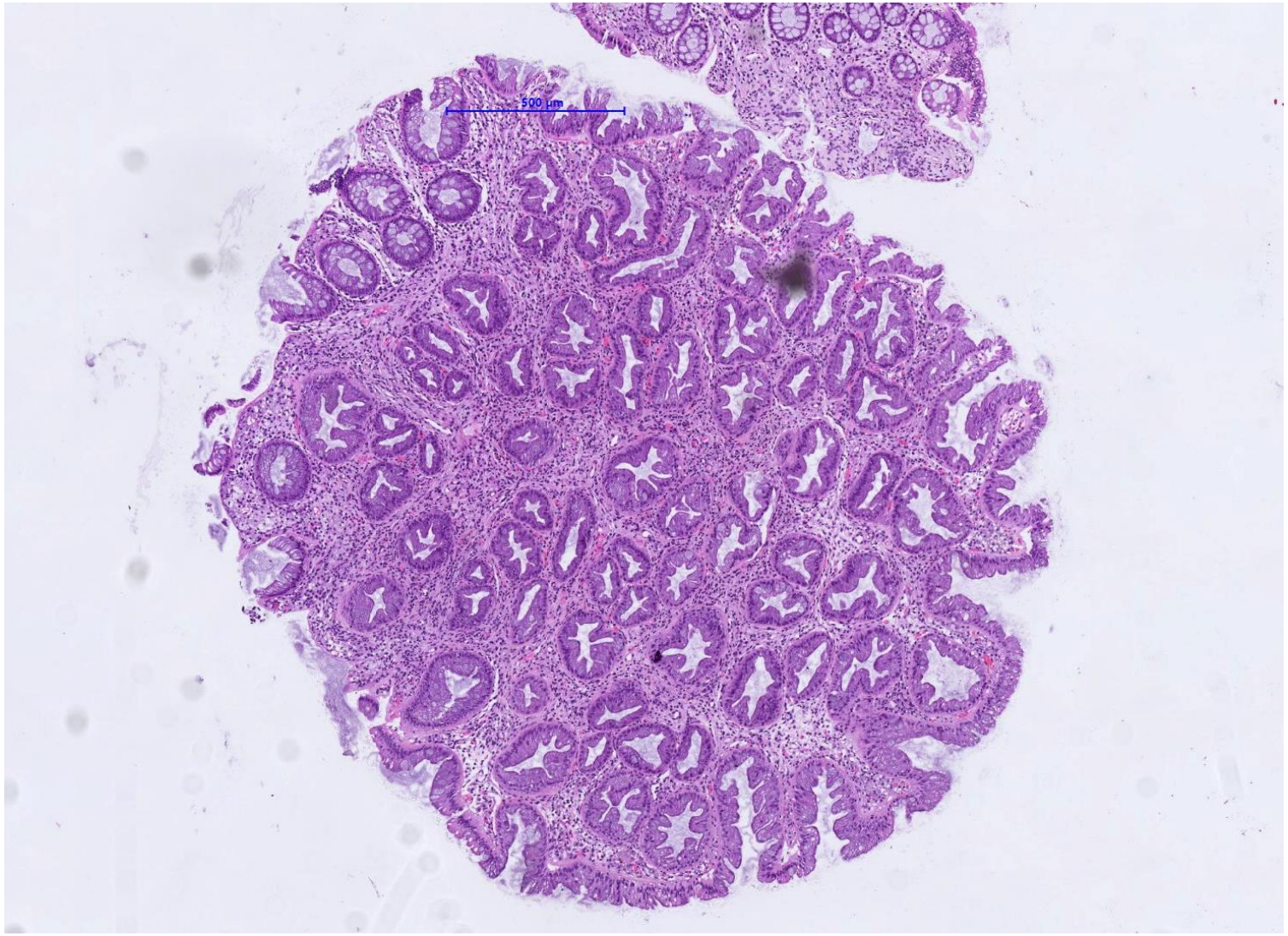
Conventional type adenoma, low grade



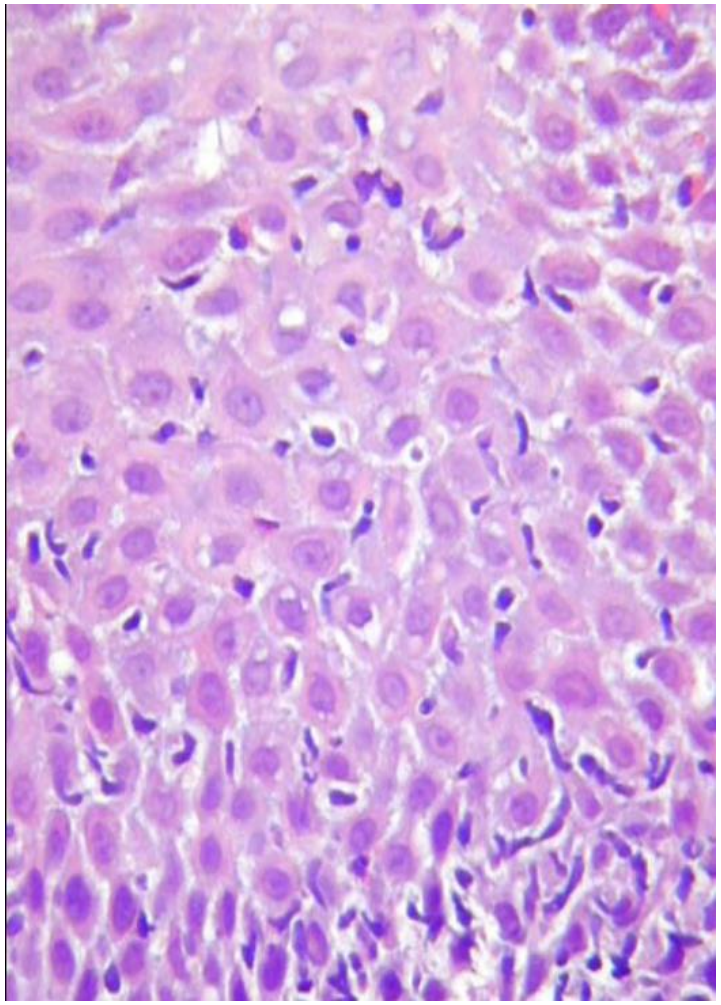
Conventional type adenoma



Hyperplastic polyp



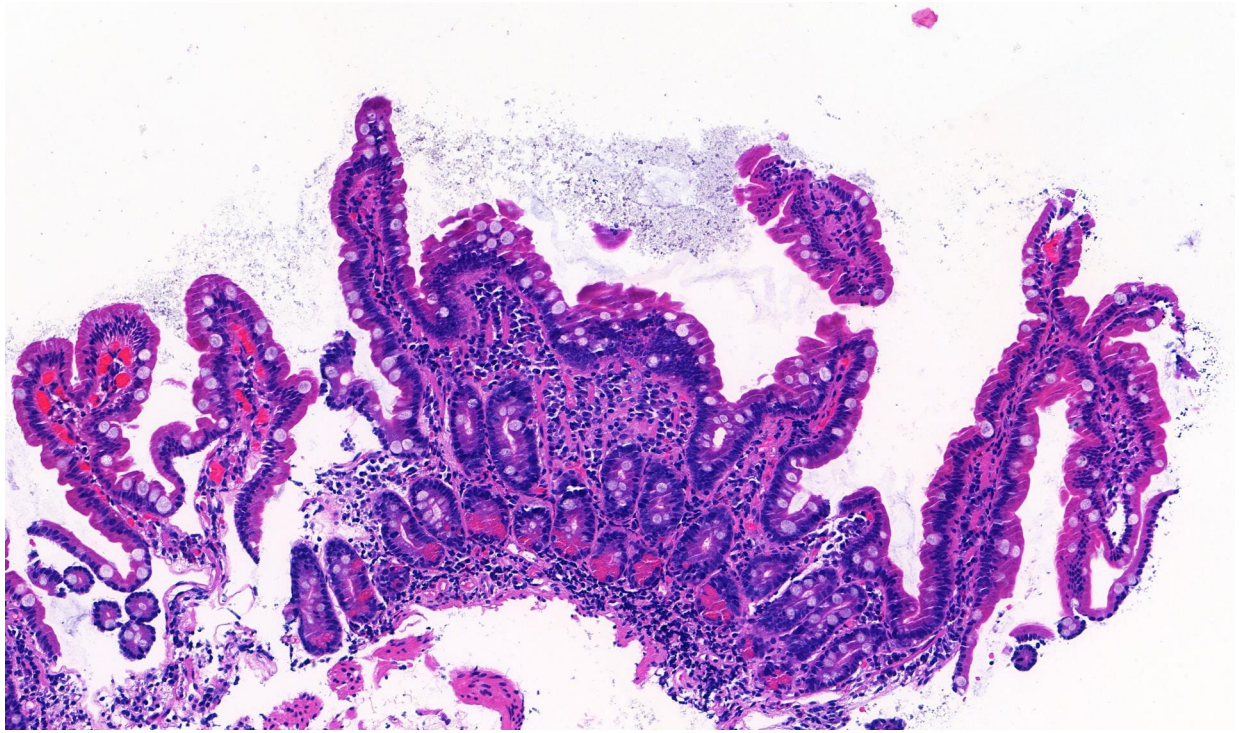
Quiz



A. This is an increased number of intraepithelial lymphocytes.
B. This image is diagnostic of lymphocytic esophagitis.
C. Candida can virtually be ruled out.
D. This image is typical of GERD.

Correct answers: A and D

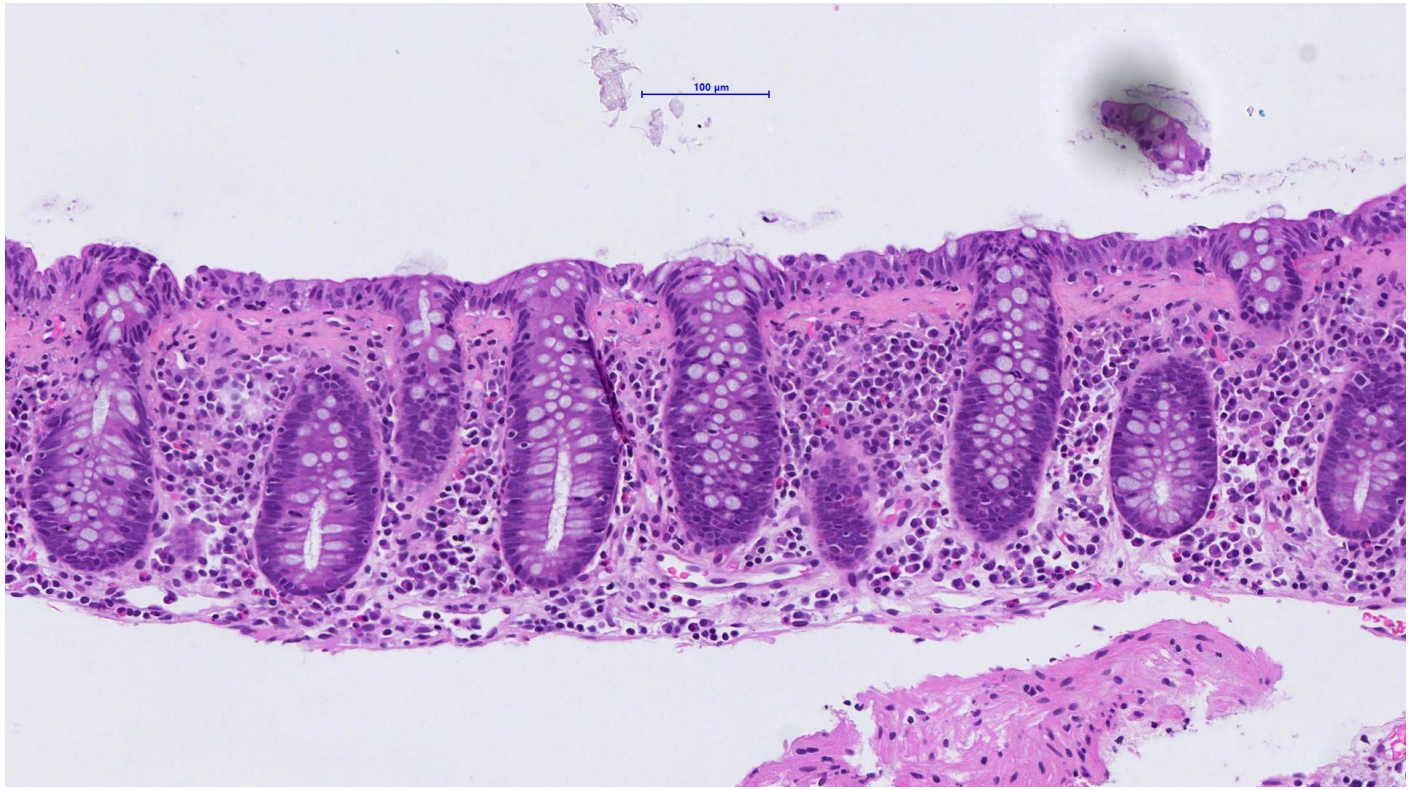
Quiz



A. This is a duodenal biopsy.
B. I am certain there are no pathogenic microorganisms.
C. There are no diagnostic features of celiac disease.
D. There is no reason to go over this biopsy at higher power.

Correct answers: A and C

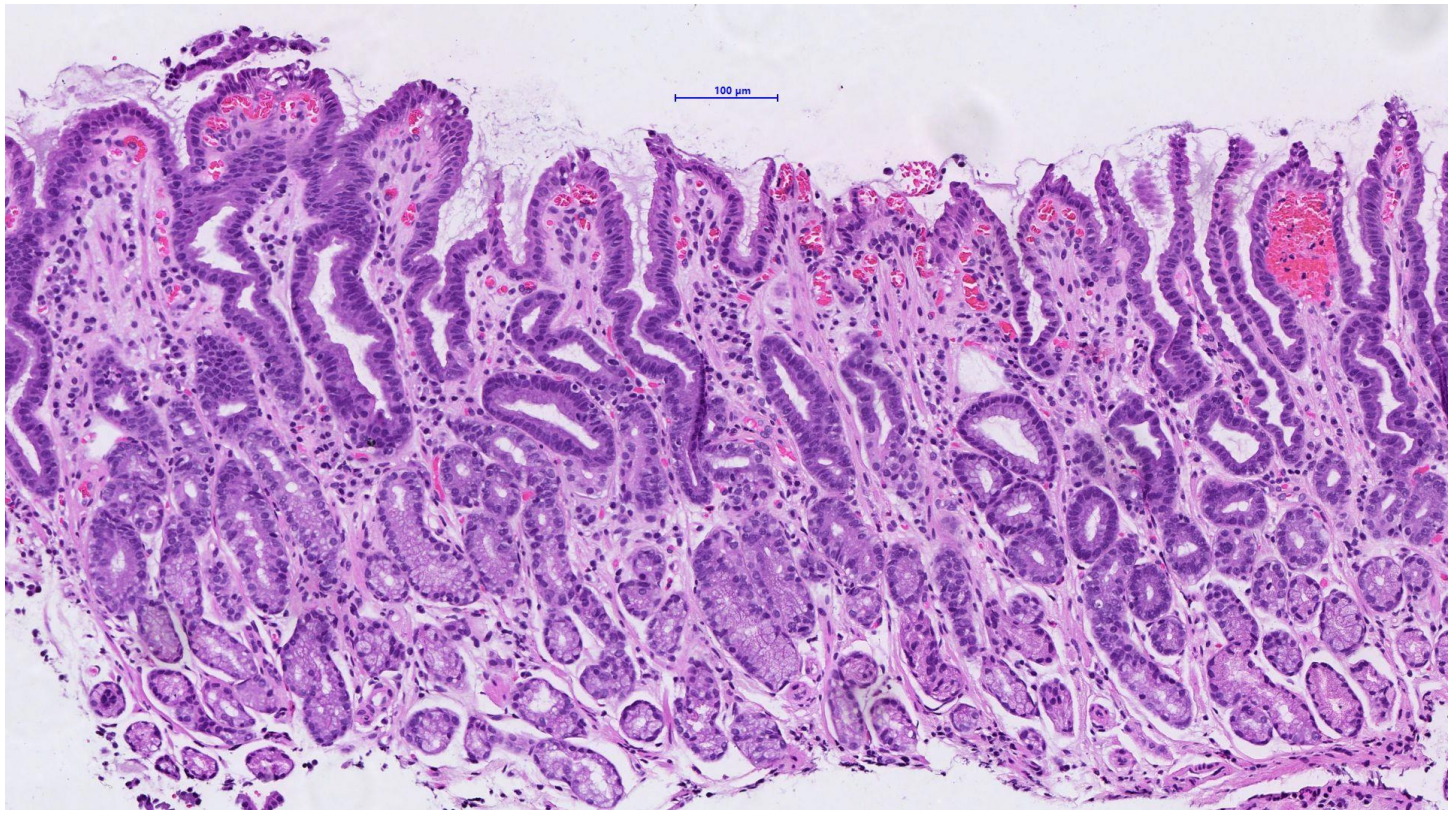
Quiz



A. This is colon biopsy shows no features of chronic damage.
B. Increase of IELs are diagnostic for this entity.
C. Histologic features of this entity are usually more pronounced in the right-sided colon.
D. IBD is a differential diagnosis in this image.

Correct answers: B and C

Quiz



A. This is antral mucosa.

B. This image is typical of reactive gastropathy.

C. I am fairly certain there is no H. pylori in this biopsy.

D. One of the most frequent causes of this disorder is NSAIDs.

Correct answers: A, B and D

Thank you for your attention!