



昆明医科大学第一附属医院
First Affiliated Hospital of Kunming Medical University
昆明医科大学第一临床医学院
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免疫组织化学染色在病理诊断中作用及意义



昆明医科大学第一附属医院病理科 潘国庆 薛凤麟
2021.5.16



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当代医学对病理工作者提出的要求

Precision Medicine

Obama 2015.3.20. 宣布
美国启动精准医学计划

精准医学
精准在哪?

作出诊断

指导治疗

预后判断

提示病情转归



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介绍内容

1

免疫组织化学技术概述

2

免疫组织化学技术作用和意义-病例分享

3

如何获得满意的免疫组化结果



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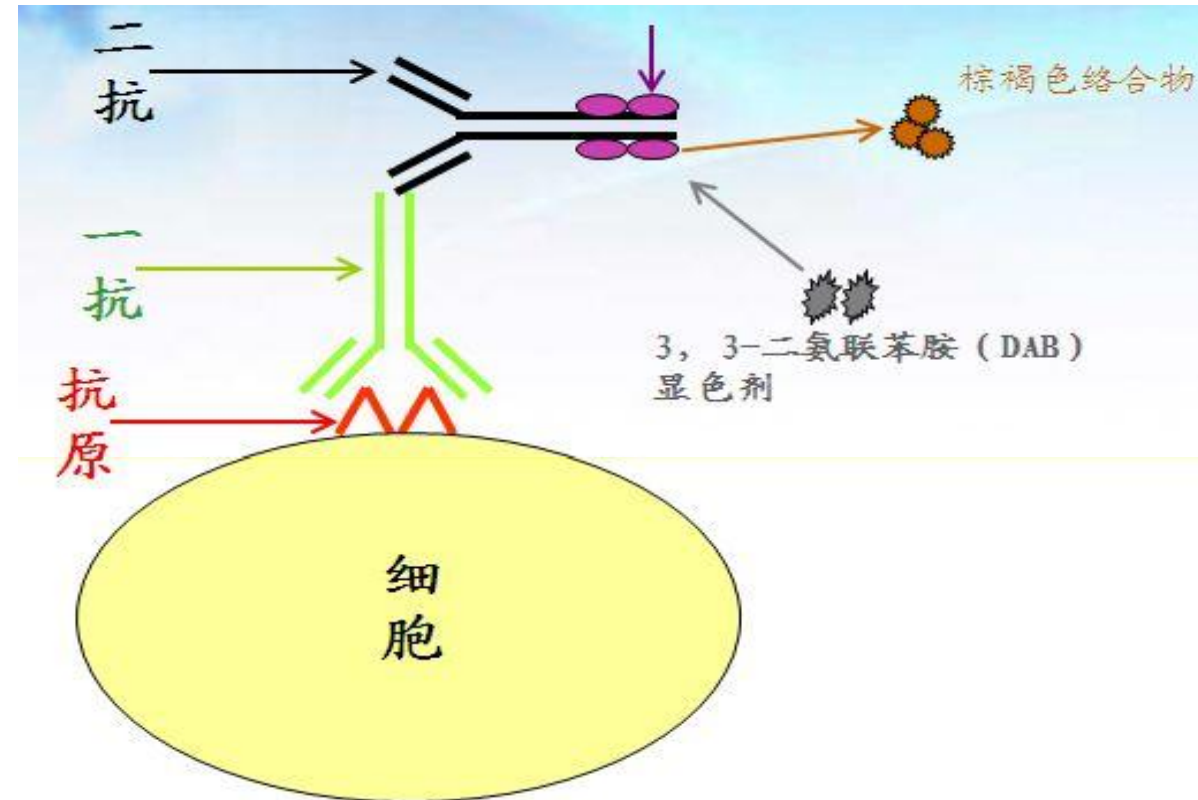


- **免疫组织化学技术始于1941年**
- 20世纪70年代随着单克隆抗体技术的发展，免疫组织化学把人们从传统病理组织学（形态学），推向**蛋白质水平（抗原、抗体的定性和定位）**，在现代病理诊断中应用日益广泛
- 在肿瘤诊断与鉴别中起着非常重要的作用，对于诊断肿瘤、肿瘤分类、判断预后产生了巨大的影响
- 扩展了对各种疾病及肿瘤形成过程的认识，提高了病理诊断与研究水平，肿瘤的分子病理诊断及靶向治疗的意义成为研究热点
- **为病理诊断带来了第一次革命（准确性）**



免疫组化原理/依据-各种组织、细胞内的化学成分不同

免疫组织化学技术
(immunohistochemistry)或**免疫细胞化学技术**(immunocytochemistry)：是应用免疫学基本原理——**抗原抗体反应**，即抗原与抗体特异性结合的原理，通过化学反应使标记抗体的**显色剂**（荧光素、酶、金属离子、同位素）显色来确定组织细胞内抗原（**多肽和蛋白质**），对其进行定位、定性及相对定量的研究

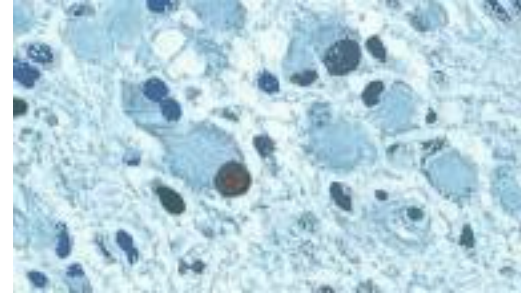
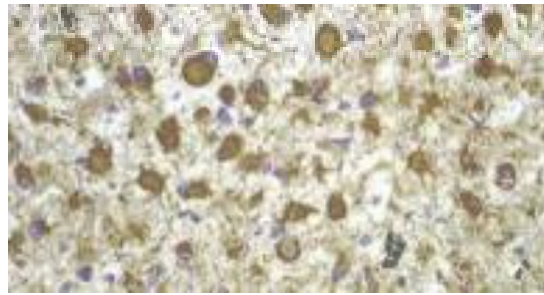
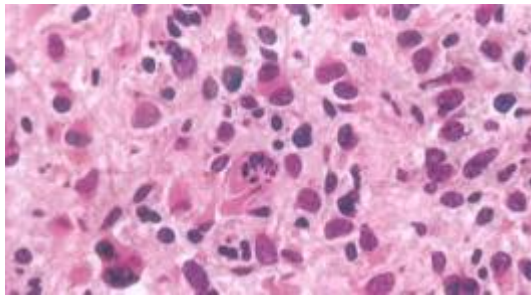


细胞身份不同



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- 它具有较高的灵敏度、特异度、操作简便
- 能将形态和功能代谢相结合，定性、定位和定量相结合，细胞水平和超微结构水平相结合，基因水平和蛋白质水平检测相结合
- 已成为病理科不可缺少的技术支持
- 经济





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免疫组化的一般临床病理应用

- 1、判断组织、细胞、病变及肿瘤的组织起源/类型
- 2、判断肿瘤良恶性
- 3、淋巴瘤的分型
- 4、确定转移性恶性肿瘤的原发部位
- 5、协助确定肿瘤分期
- 6、发现微小转移灶
- 7、检测肿瘤增殖活性
- 8、诊断感染性疾病

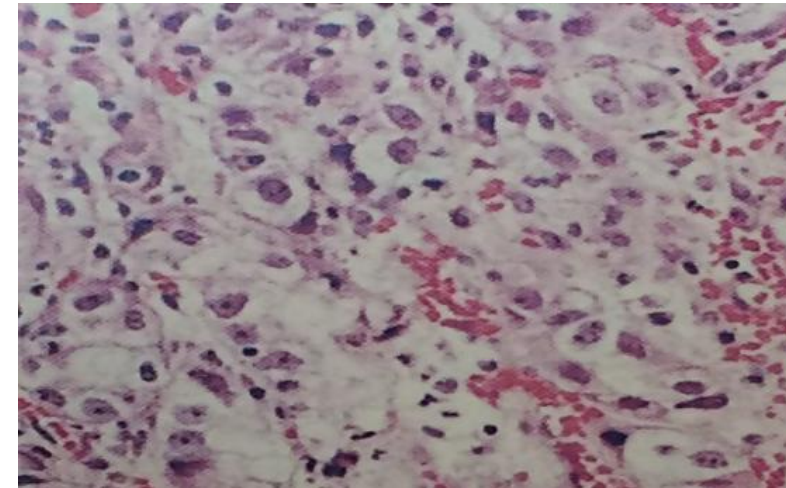
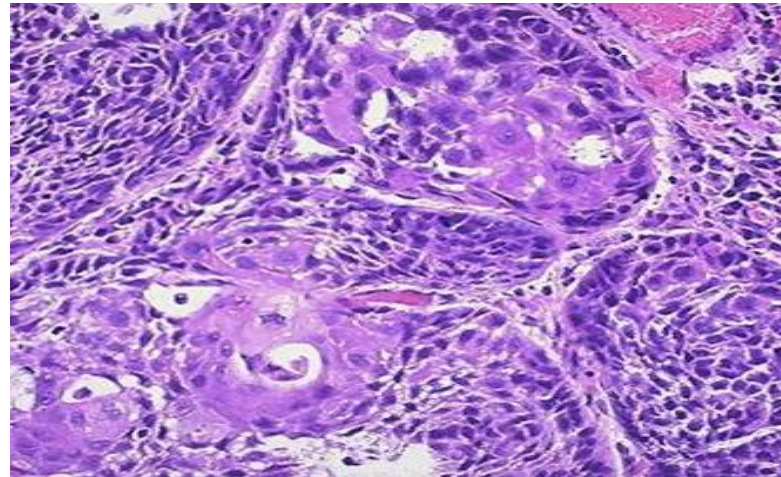
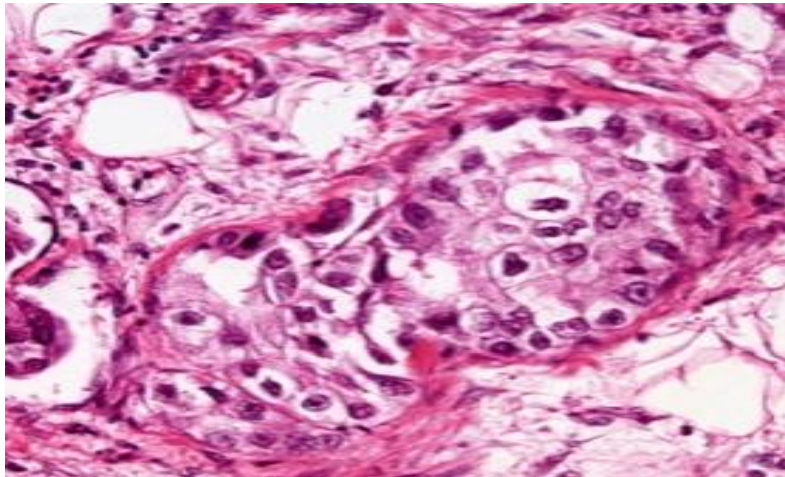




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细胞形态可以很相似-上皮（样）细胞



软组织上皮样的肿瘤



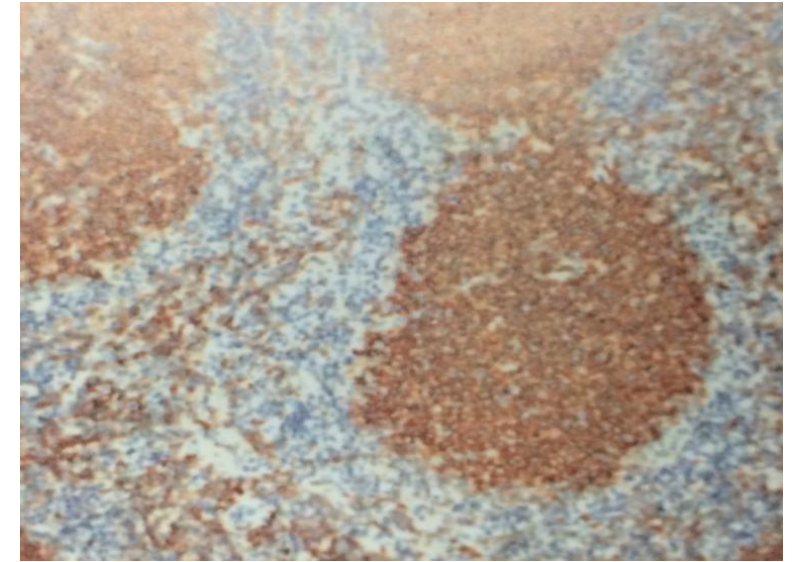
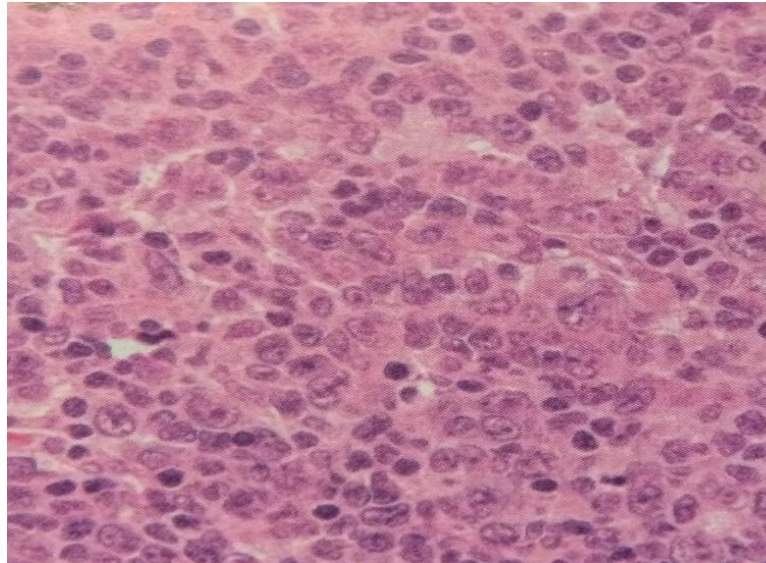
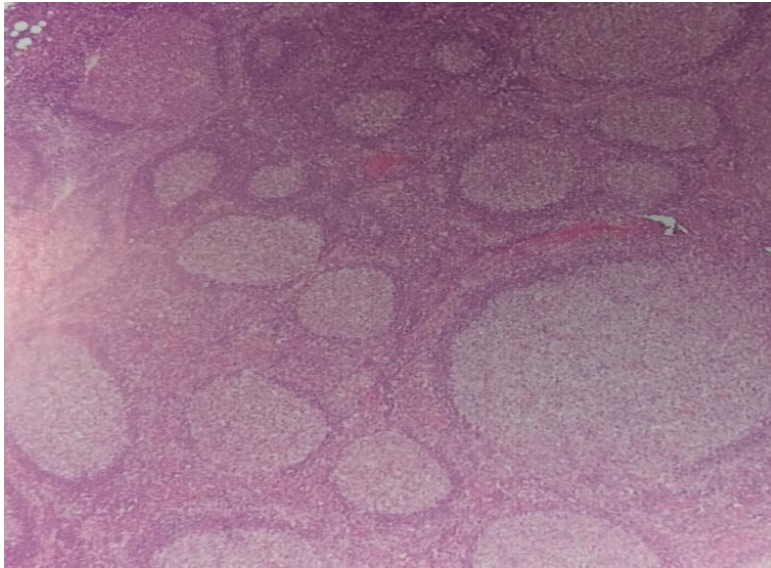
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免疫组化的作用与意义-判断组织学来源

——淋巴造血系统（辨认结构，认识细胞）

T细胞
B细胞
浆细胞
免疫母细胞
中心母细胞
中心样细胞
单核样细胞
组织细胞

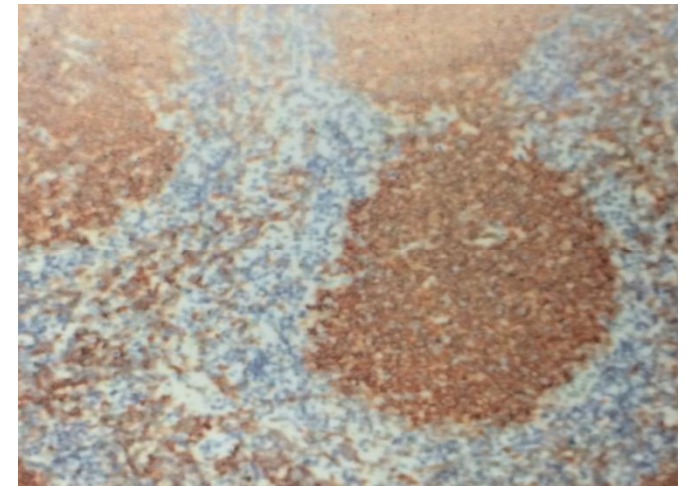
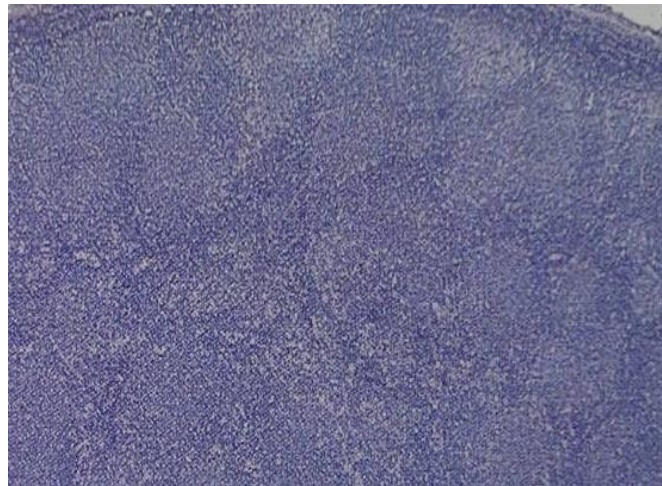
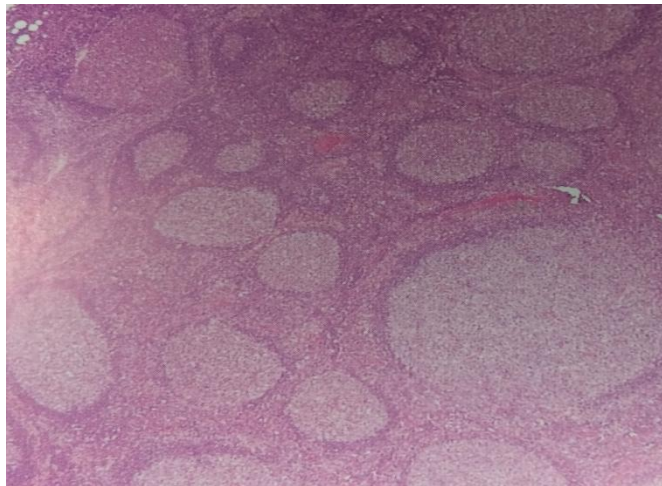
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良恶性鉴别：淋巴结反应性增生和滤泡性淋巴瘤



BCL-2



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确定组织类型亚型



套细胞淋巴瘤：CD5、CyclinD1

间变性大细胞淋巴瘤：CD30

淋巴母细胞淋巴瘤：TDT

霍奇金淋巴瘤：CD30、CD15

NK/T淋巴瘤：CD56



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DLBCL预后



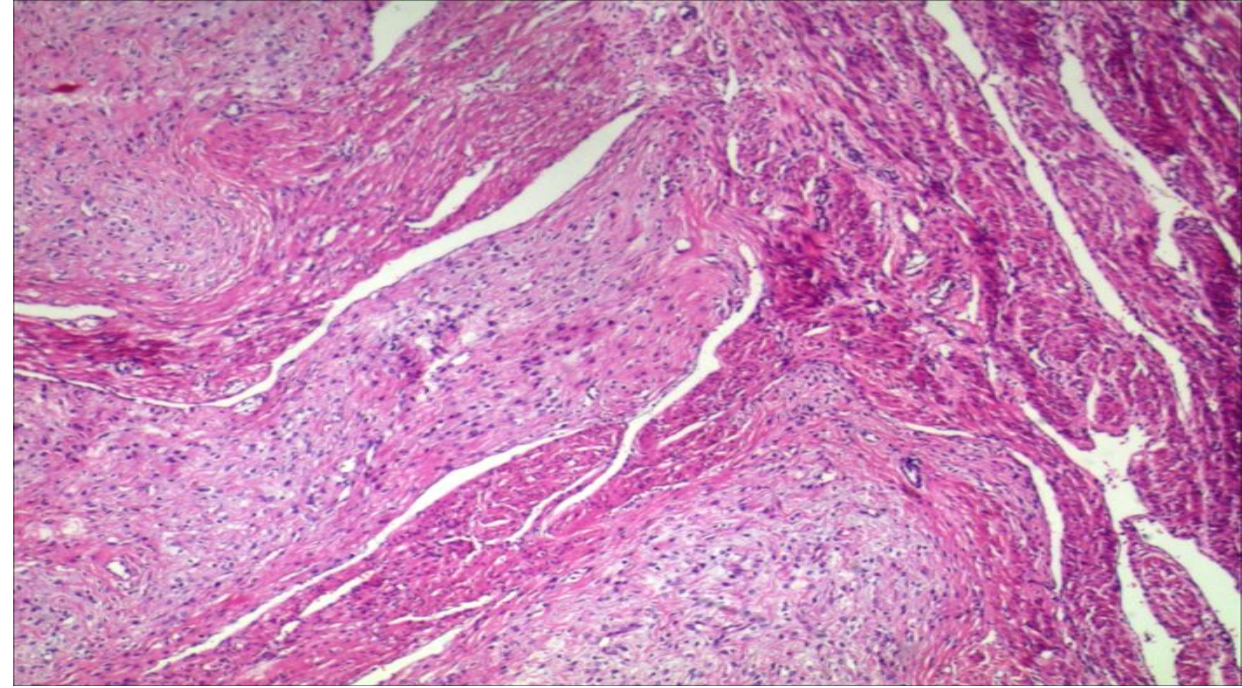
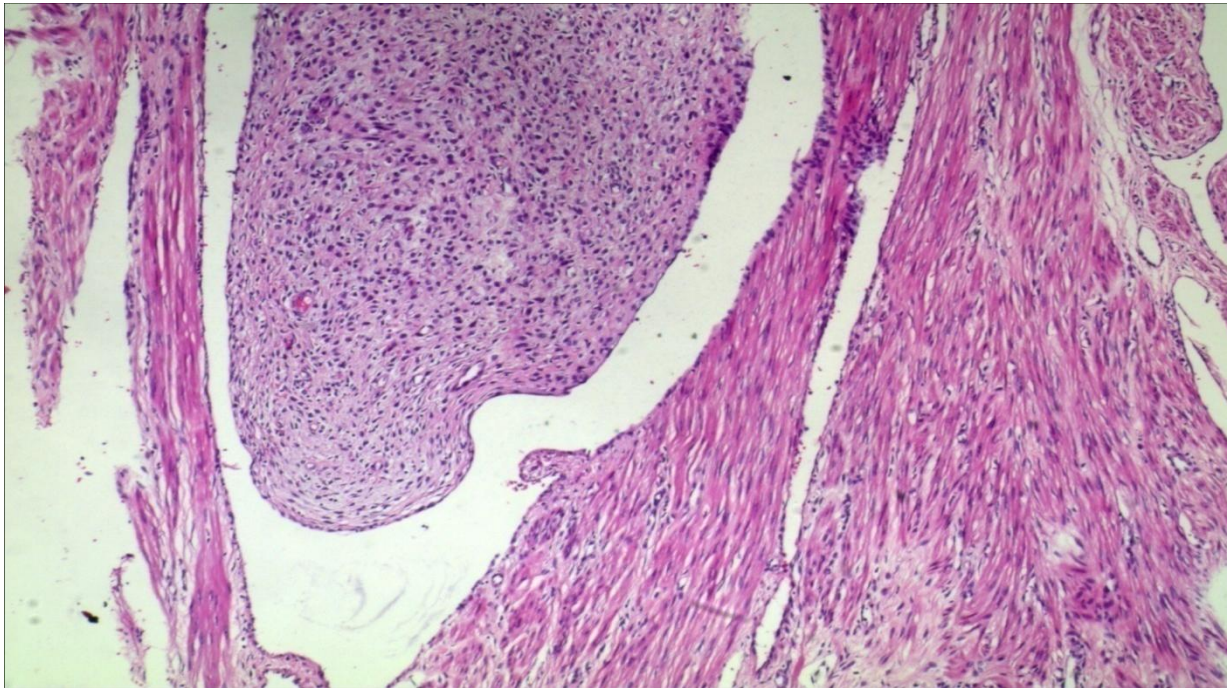


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免疫组化的作用与意义-判断组织学来源

——软组织（辨认结构，认识细胞）

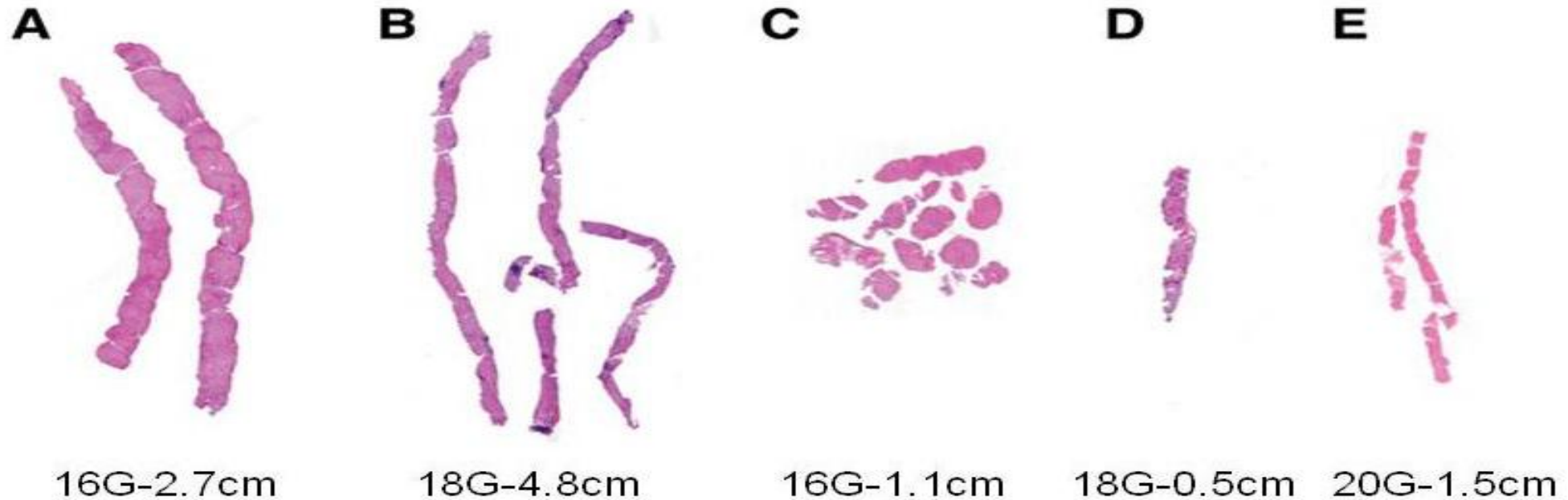
平滑肌
横纹肌
神经
纤维
.....





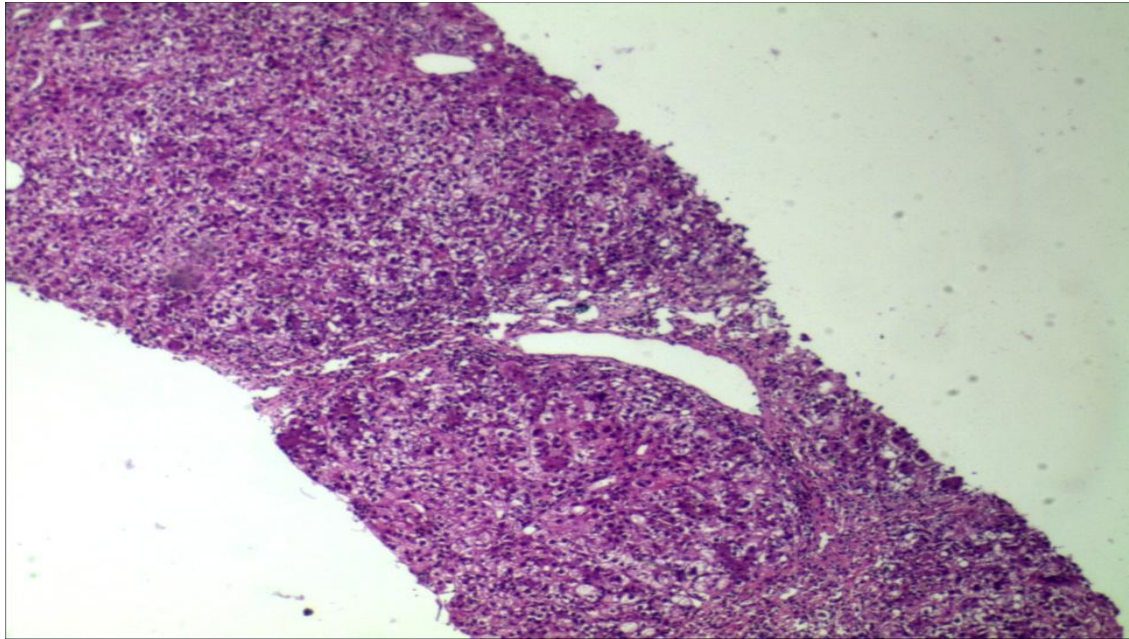
免疫组化的作用与意义-判断细胞的组织来源、类型

- 对肝穿标本的要求 使用16G穿刺针，长度2-3cm以上，包含至少11个完整的汇管区。至少达1.5cm，含6个汇管区。

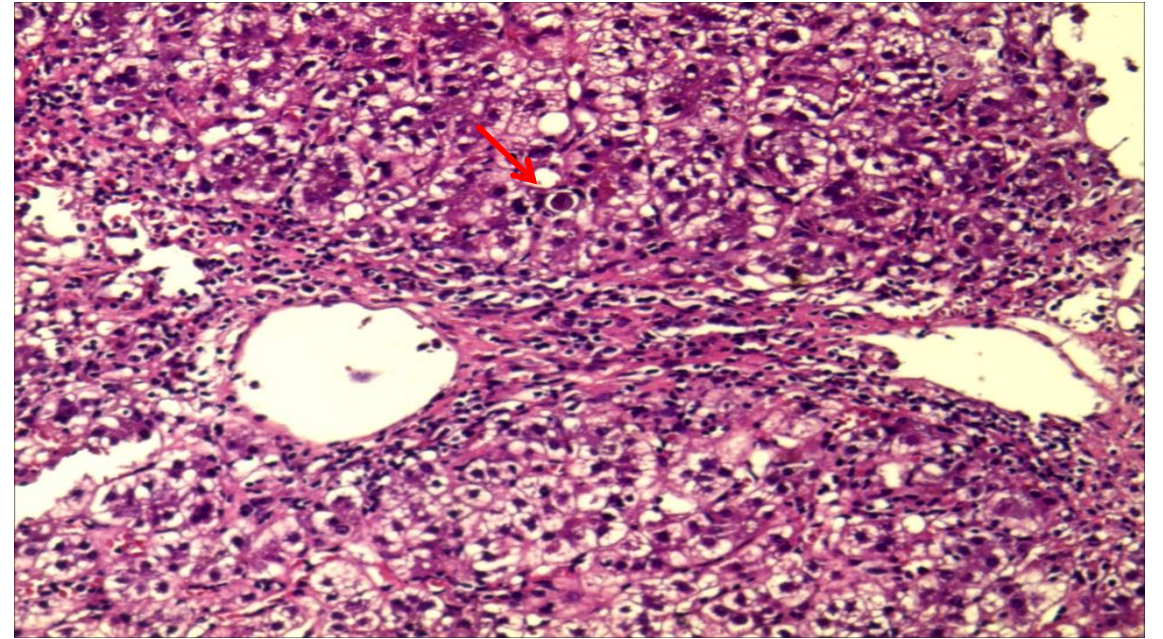




• 病例1：女性，38岁，临床诊断：肝损伤查因



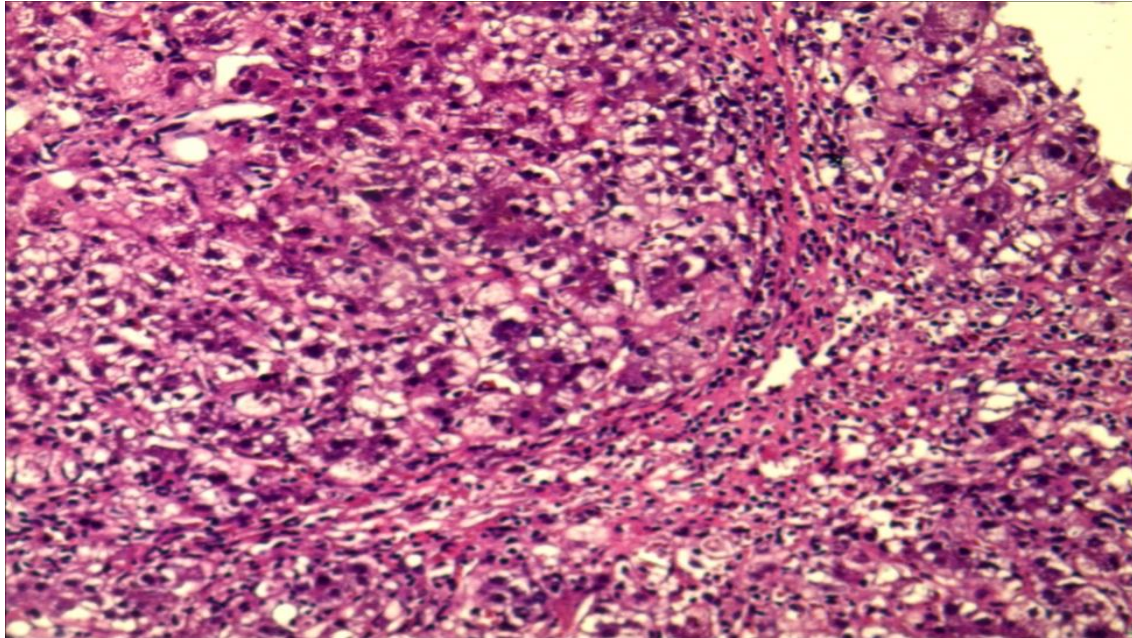
界面炎、小叶炎



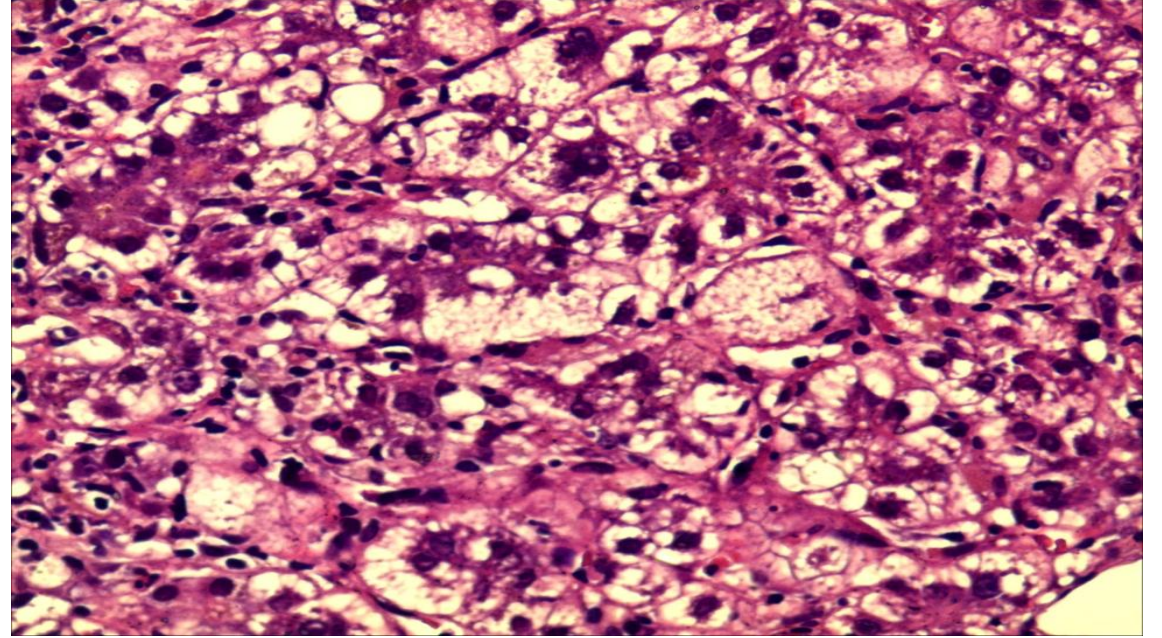
肝细胞变性，见嗜酸性小体



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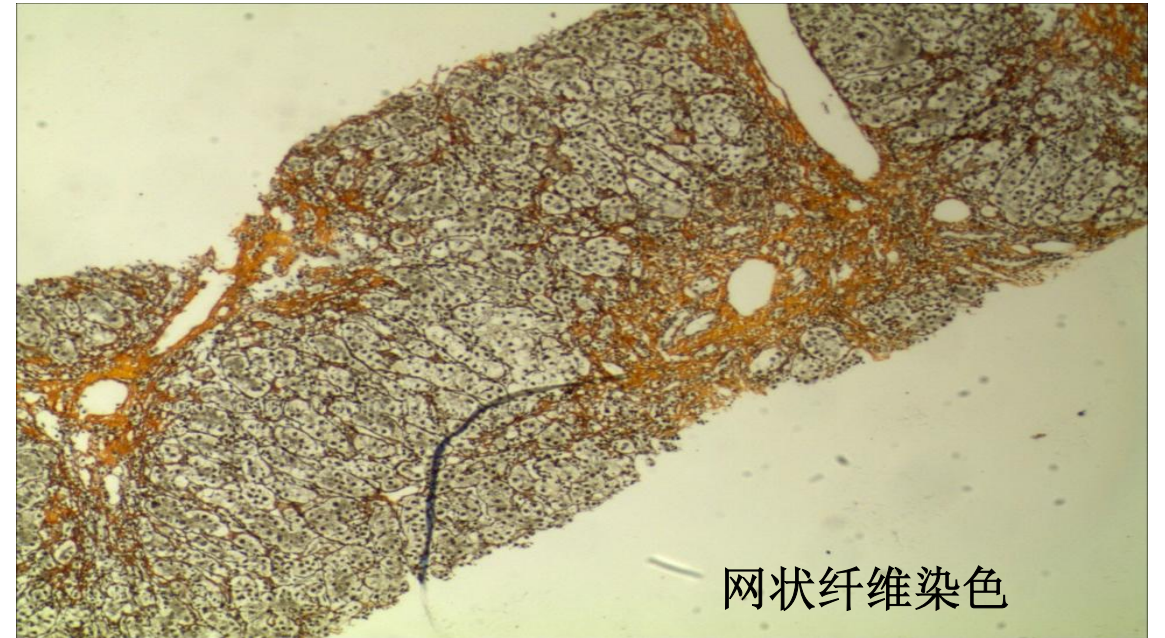
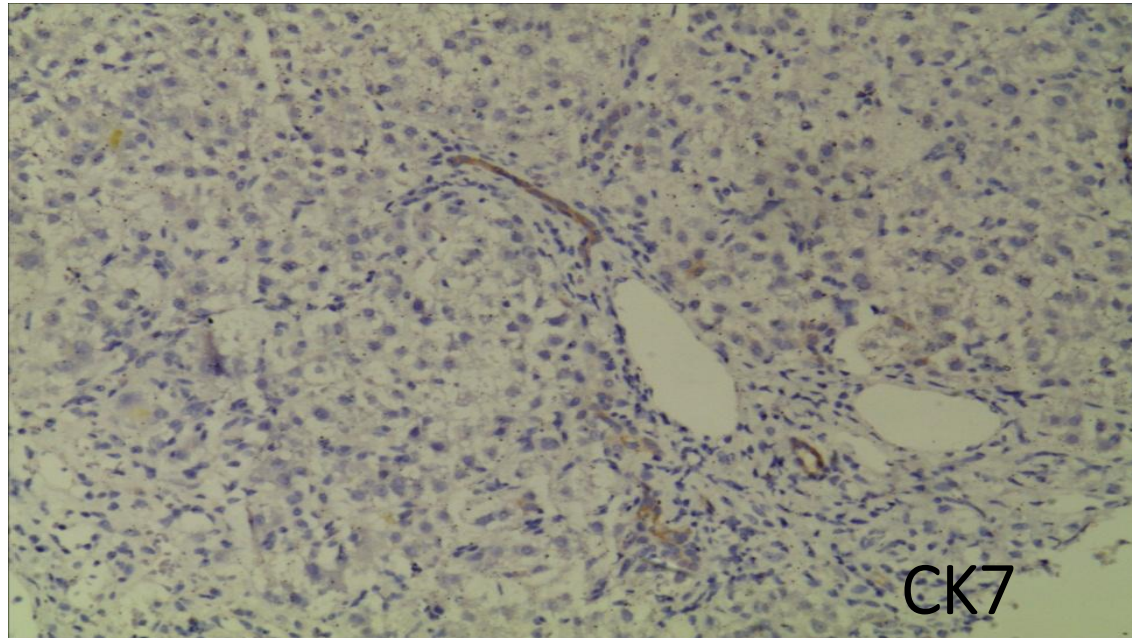
小叶炎症



肝细胞玫瑰样花结



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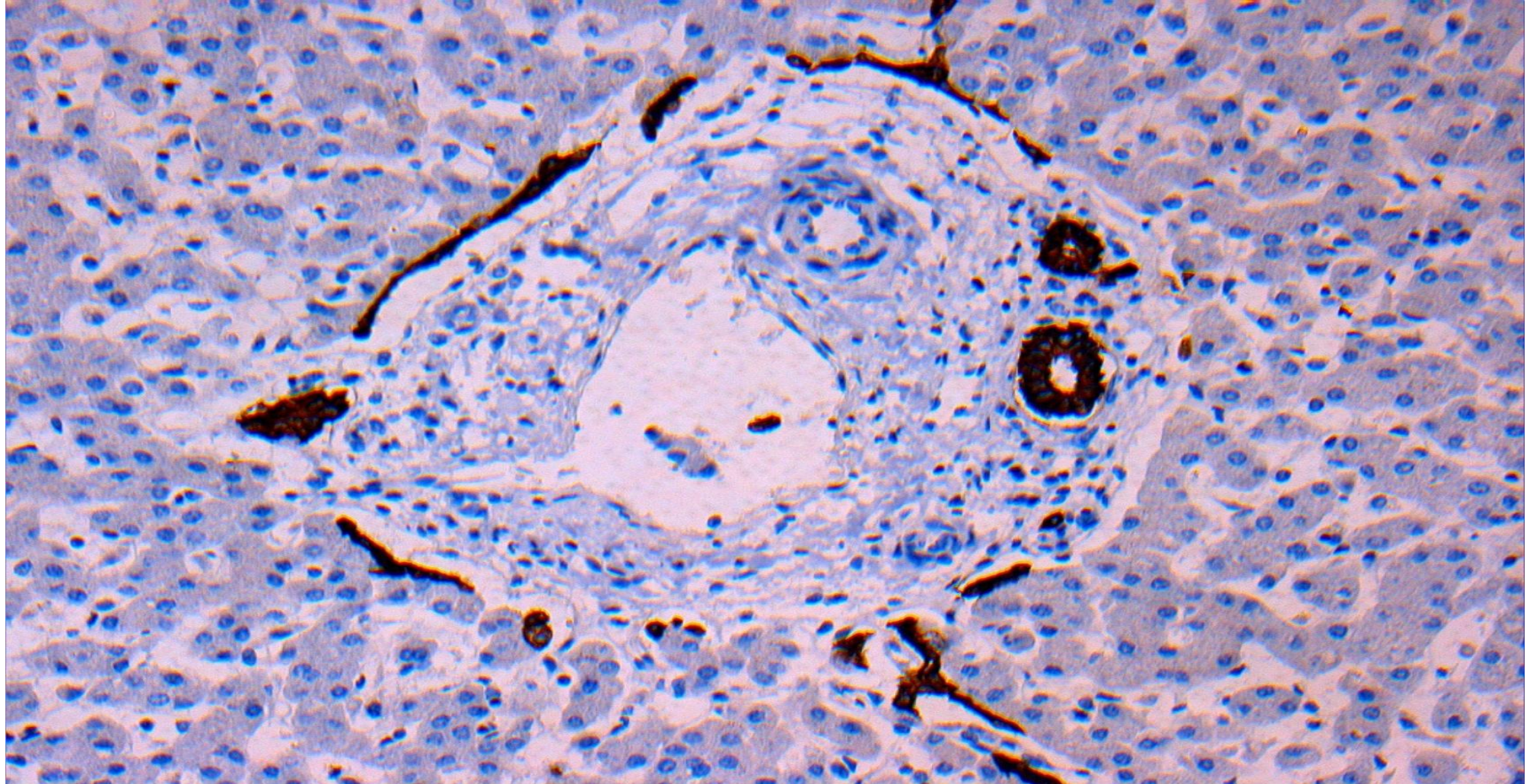


窦周纤维化、汇管区周围纤维化



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CK7标记胆管上皮细胞





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病理诊断

(肝脏穿刺活检标本) 重叠综合征 (自身免疫性肝炎 + 原发性胆汁性肝硬化)



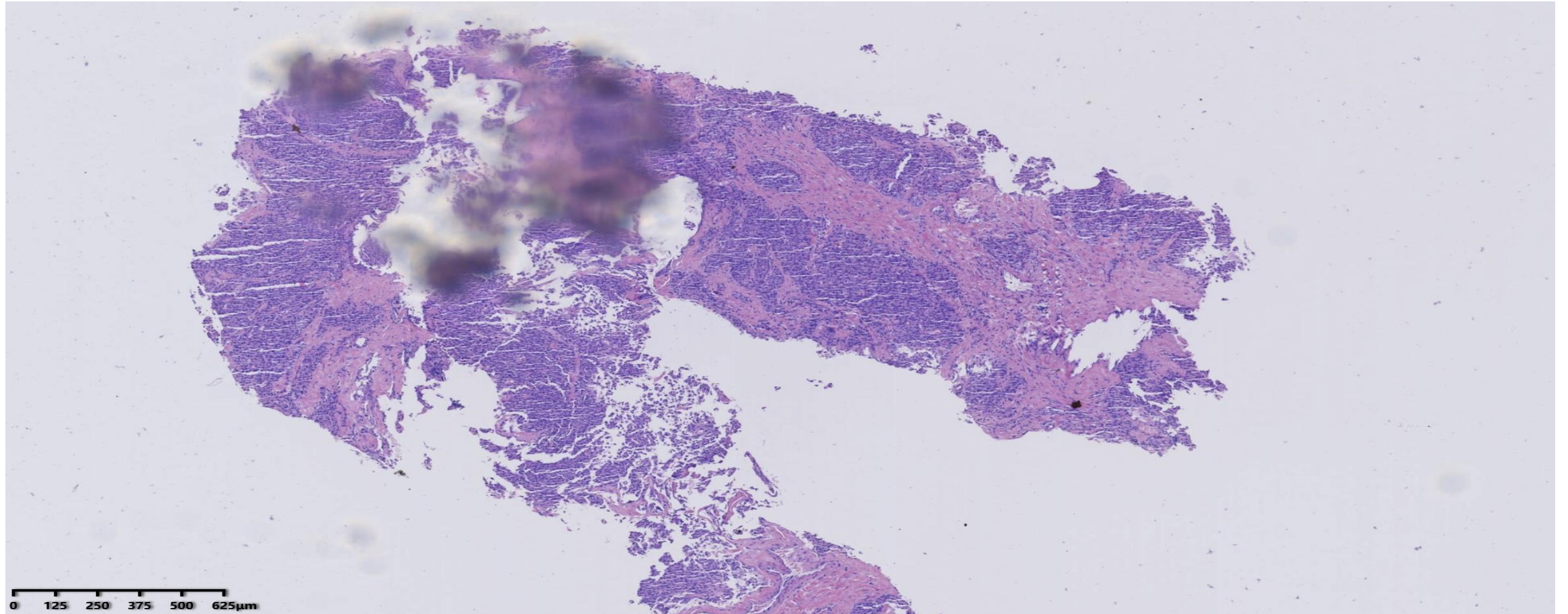
免疫组化的作用与意义-判断肿瘤组织类型/来源-病例2

- 肿瘤内科专家提供病史
- 女性，40岁，主因“**检查发现肝脏多发占位**”入院，影像学检查：
胰腺占位
- 肉眼所见：灰白色肝脏穿刺组织一条，长度约为1.0cm，直径约0.1cm



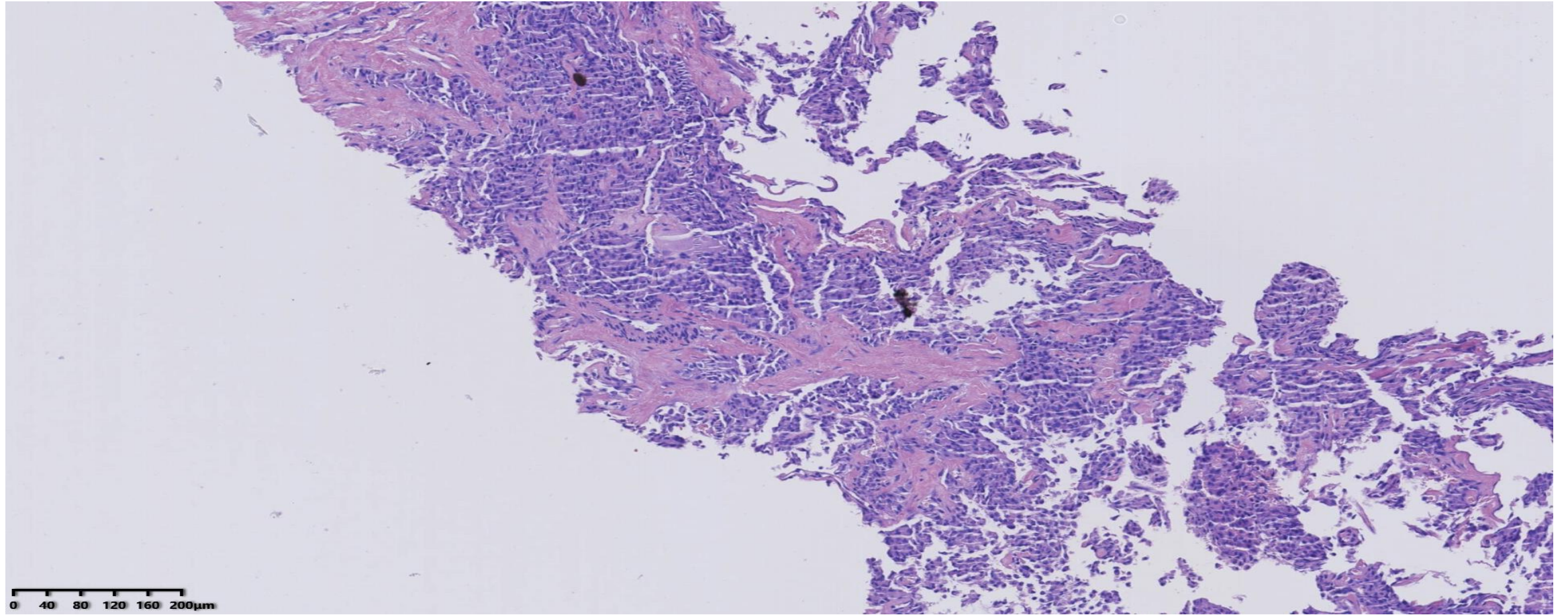
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HE染色



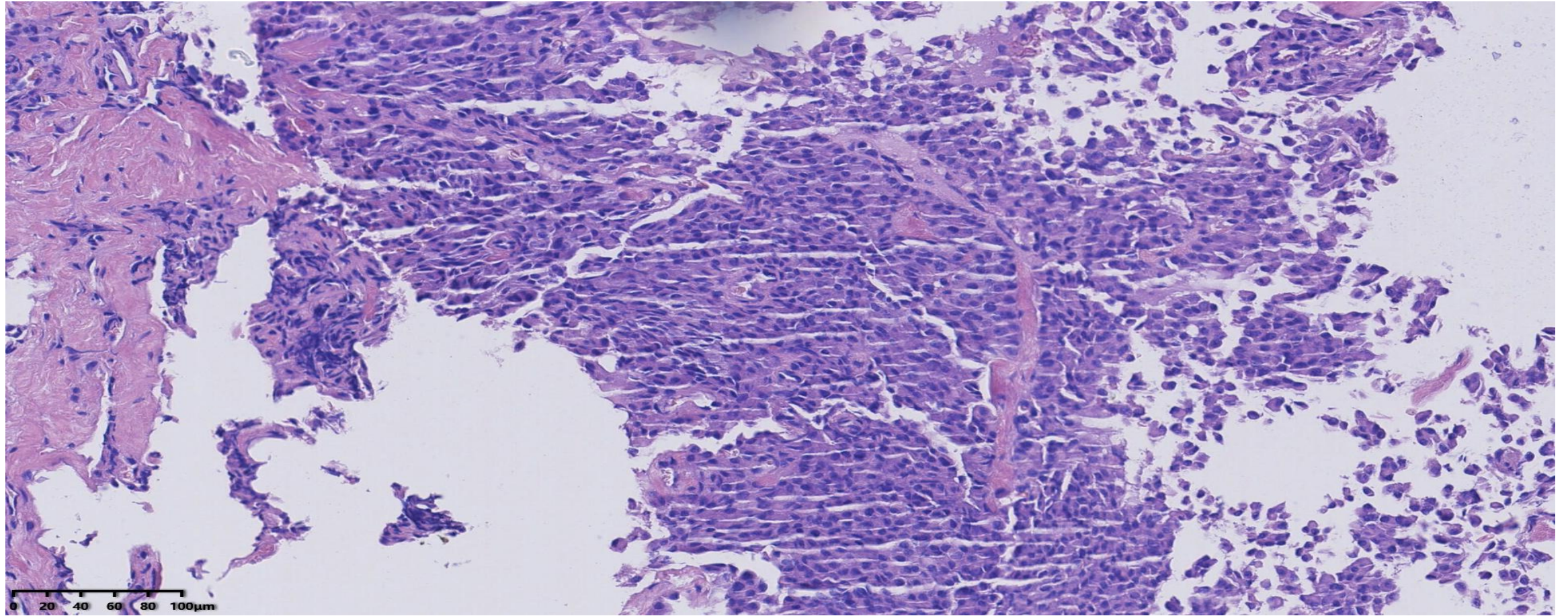


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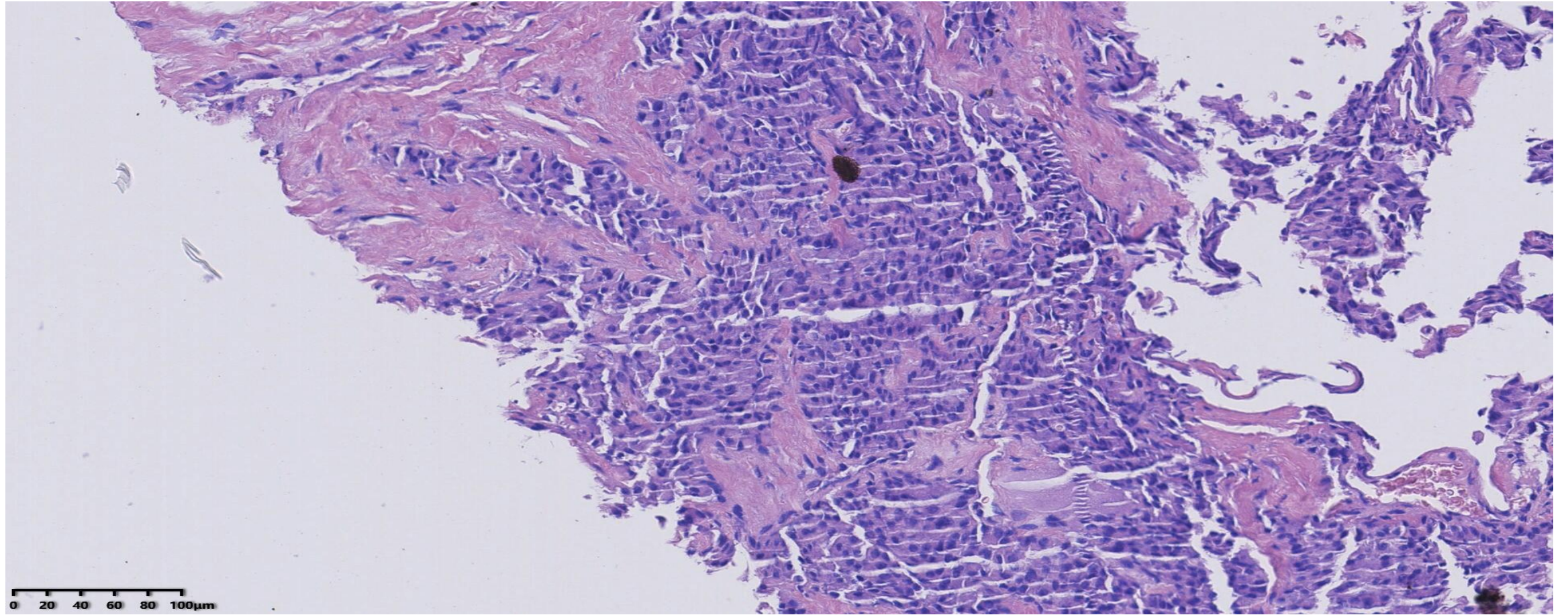


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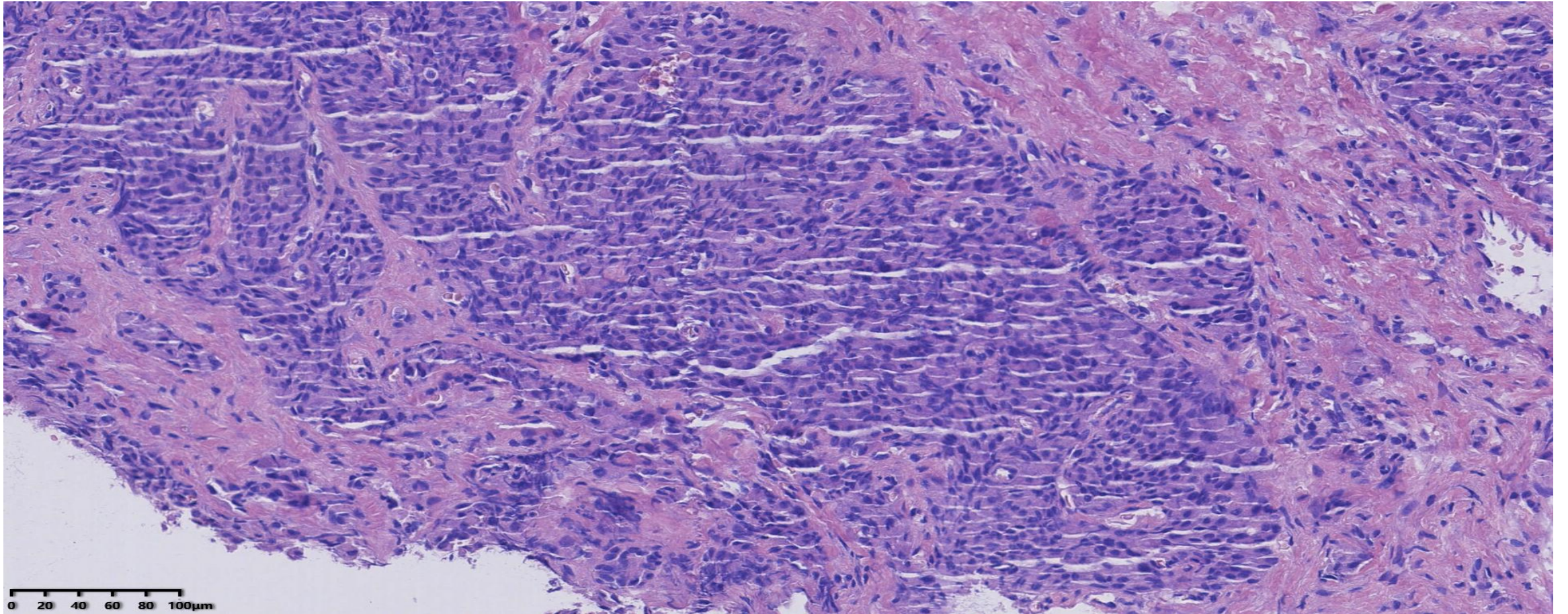
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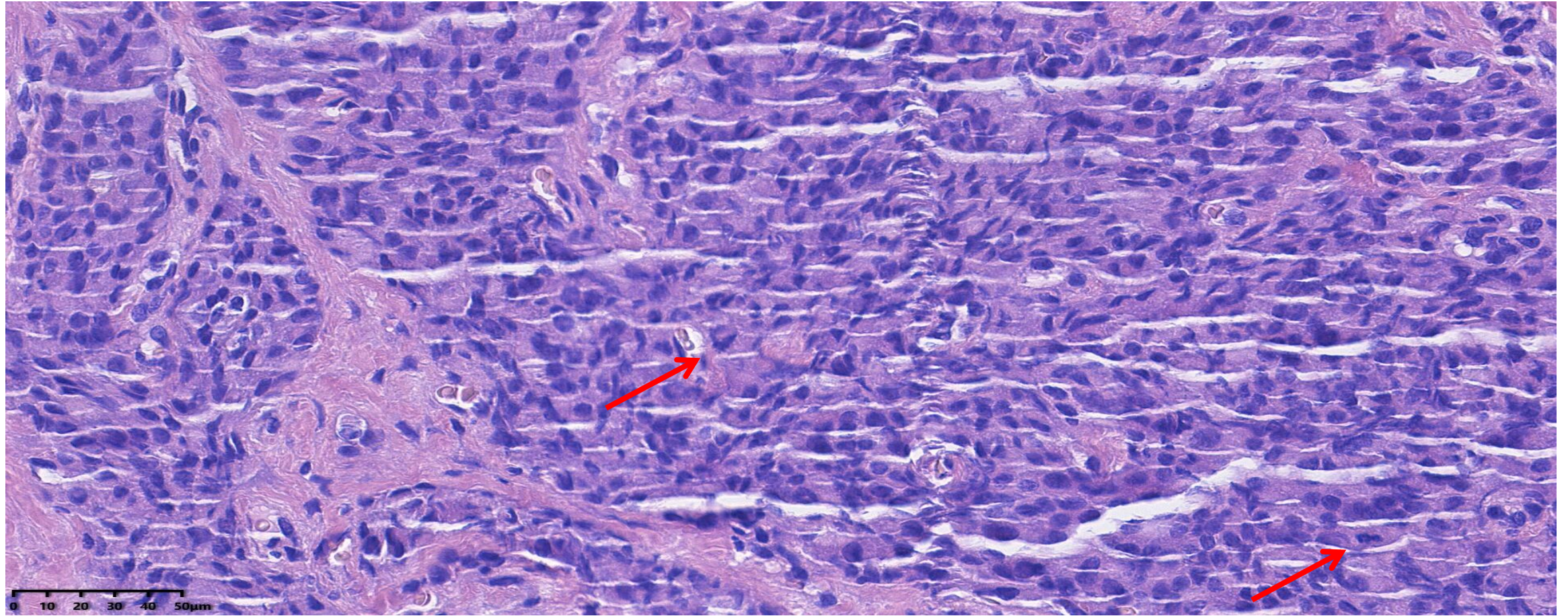
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形态学有器官样结构趋势



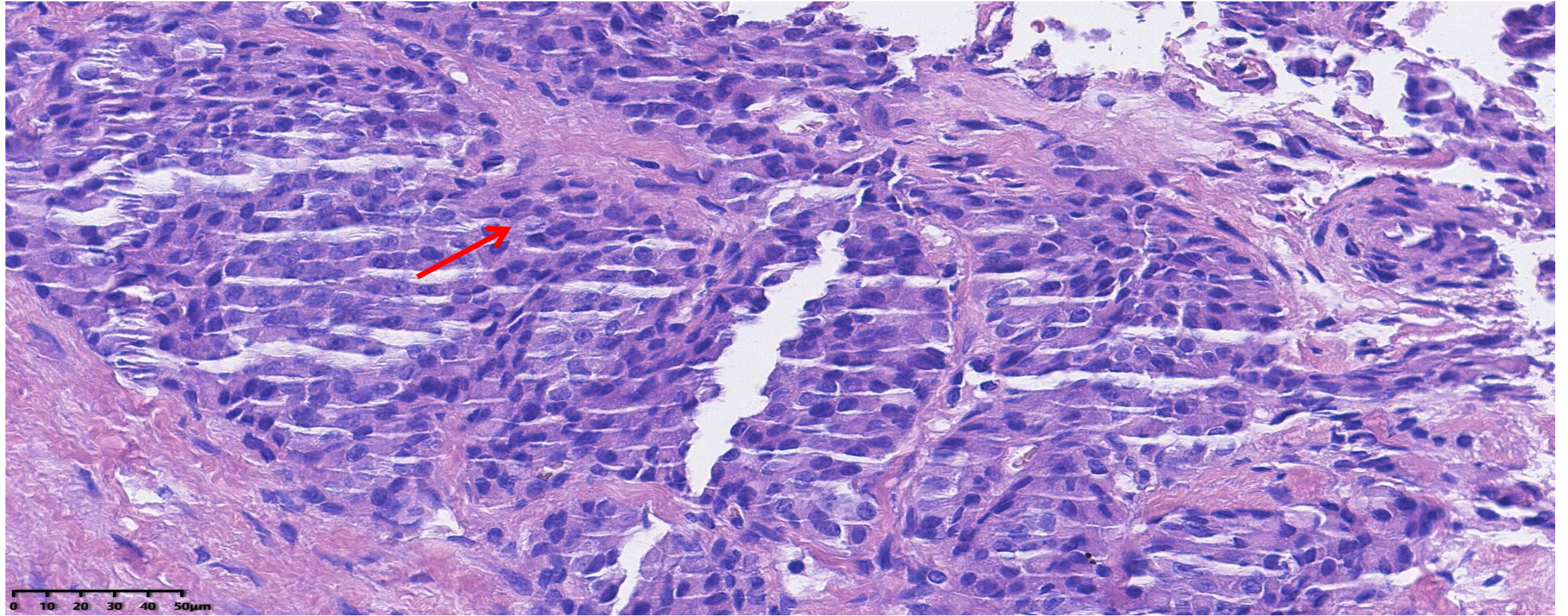


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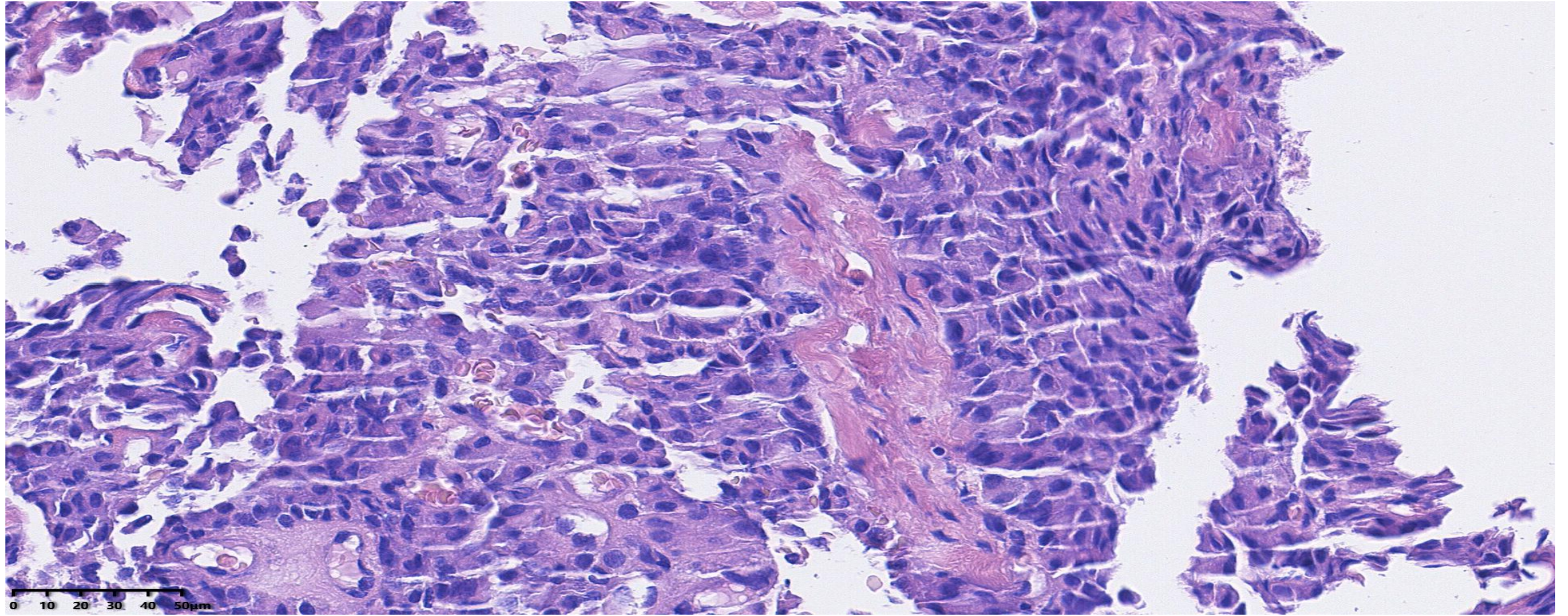


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病理初步诊断：

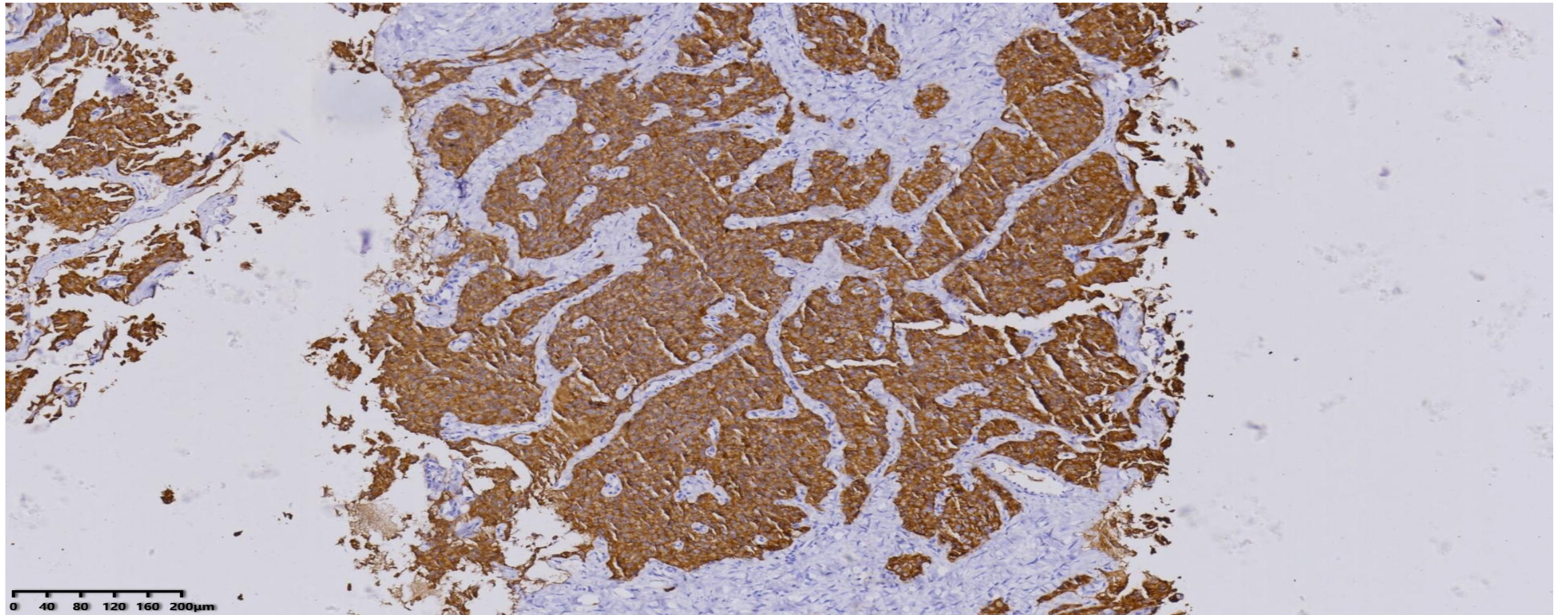
（ 肝脏穿刺活检标本 ）

恶性肿瘤，目前正行免疫组化标记协助诊断与鉴别诊断。



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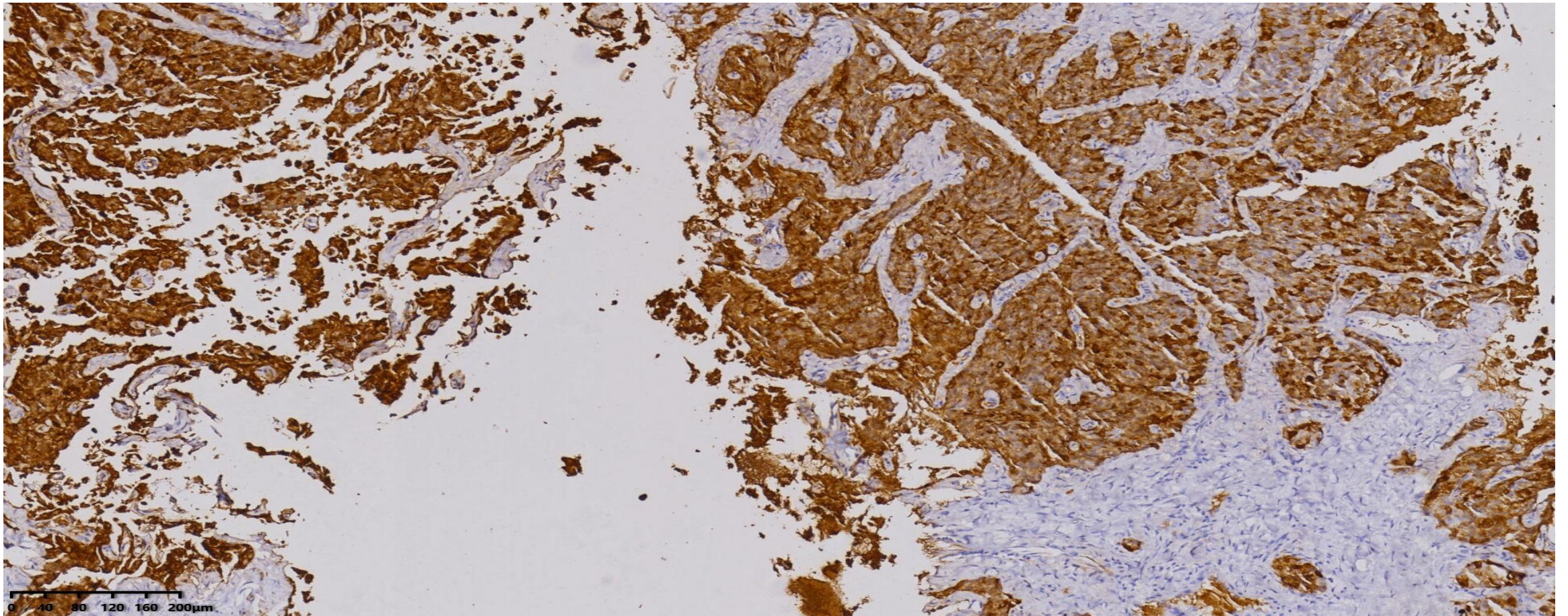
Syn





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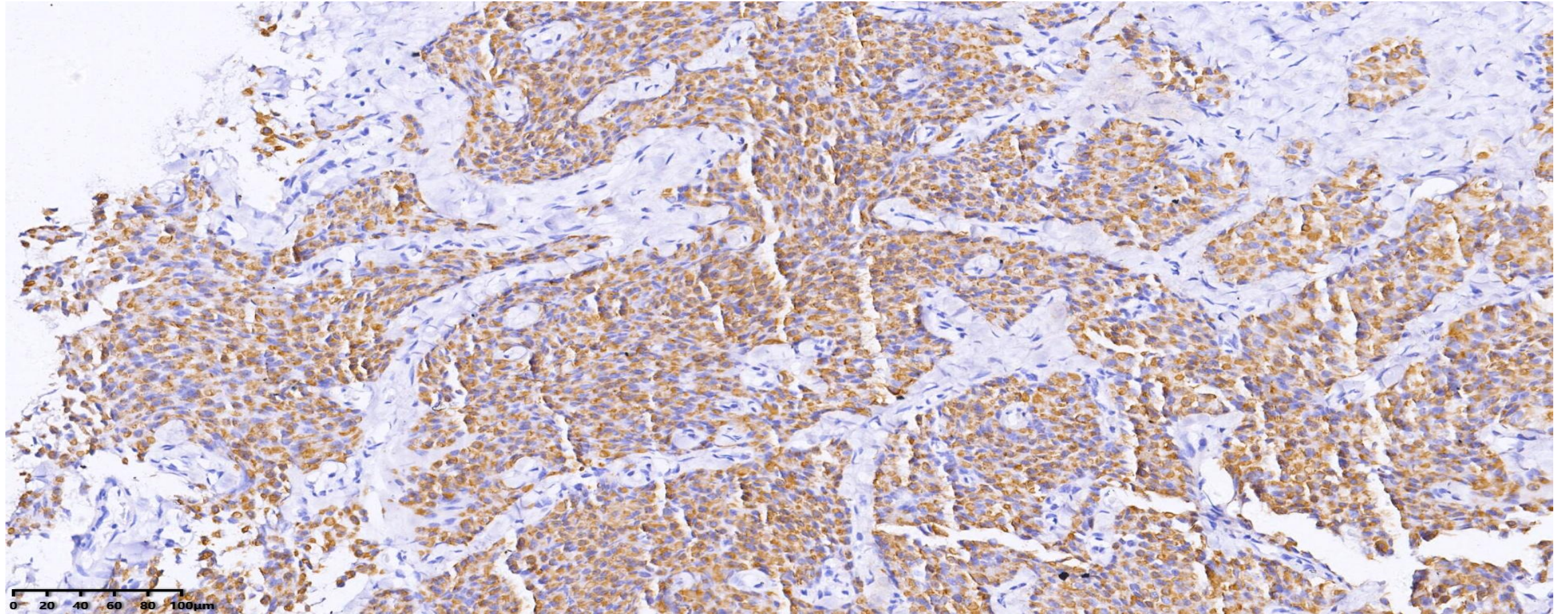
CgA





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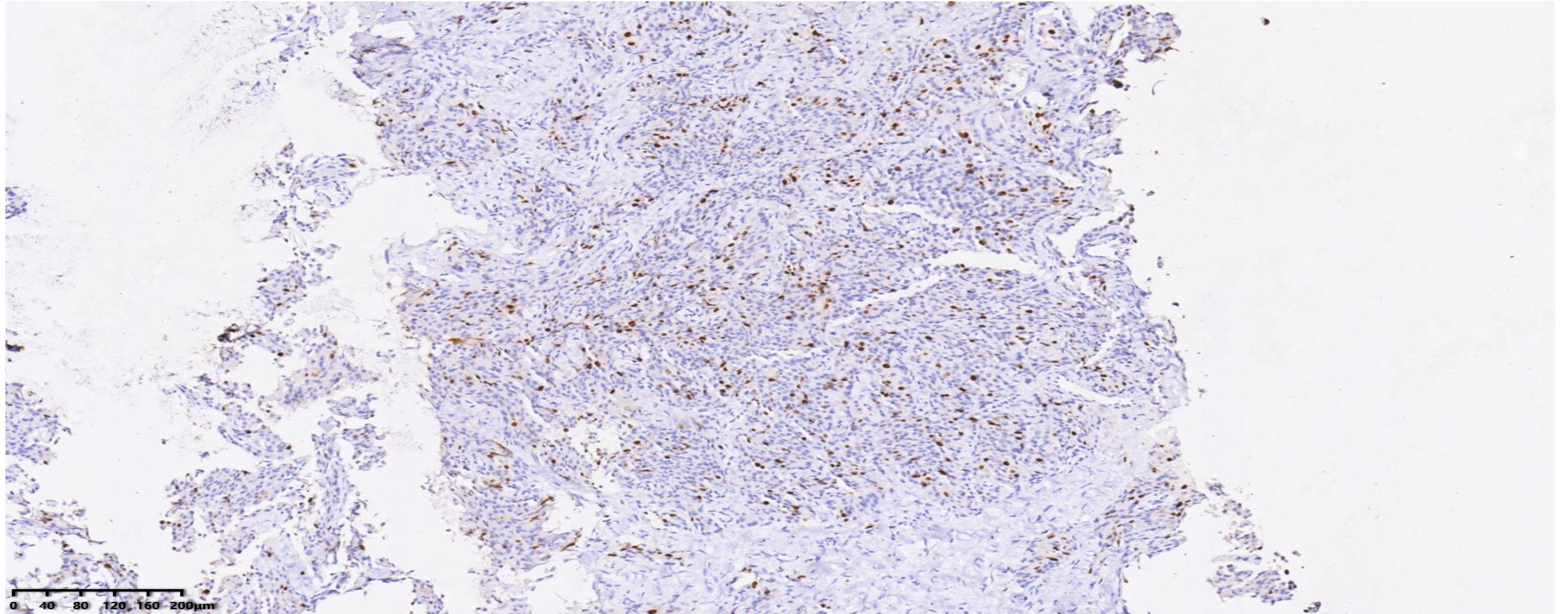
CK18





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Ki-67





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免疫组化结果

- **Ki-67 (+, 20%)**
- **CD56(+)**
- **Syn (+)**
- **CgA (+)**
- **EMA(+)**
- **CK-pan (+)**
- **CK8 (+)**
- **CK18 (+)**
- **核分裂像 : 5/10HPF**
- **P53 (-)**
- **Heppar (-)**
- **Hepatocyte (-)**
- **CK7(-)**
- **CK19(-)**
- **MUC(-)**



- 免疫组化：**Syn, CgA, CD56**阳性是神经内分泌细胞和神经内分泌肿瘤的组织学身份标记，但是**确诊并不要求必须同时阳性**
- Syn/ 突触素，是负责运送的突触小泡（可以在细胞浆内弥漫分布，敏感性高）
- CgA/嗜铬粒蛋白A，是包绕肽类激素、胺类物质、有界膜的神经内分泌电子致密颗粒的膜蛋白/载体（多位于细胞基底部，特异性高）
- CD56/神经细胞粘附分子膜蛋白（敏感性高）





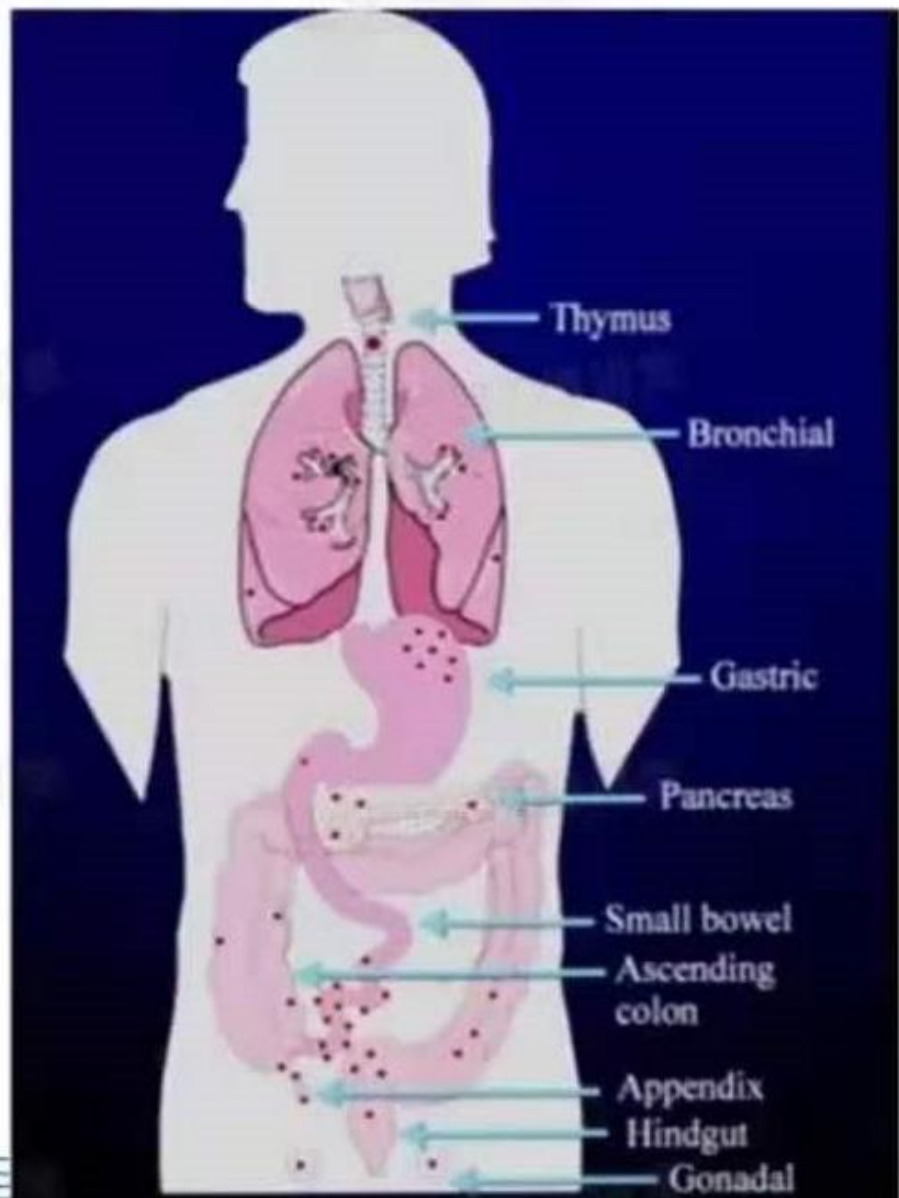
定义

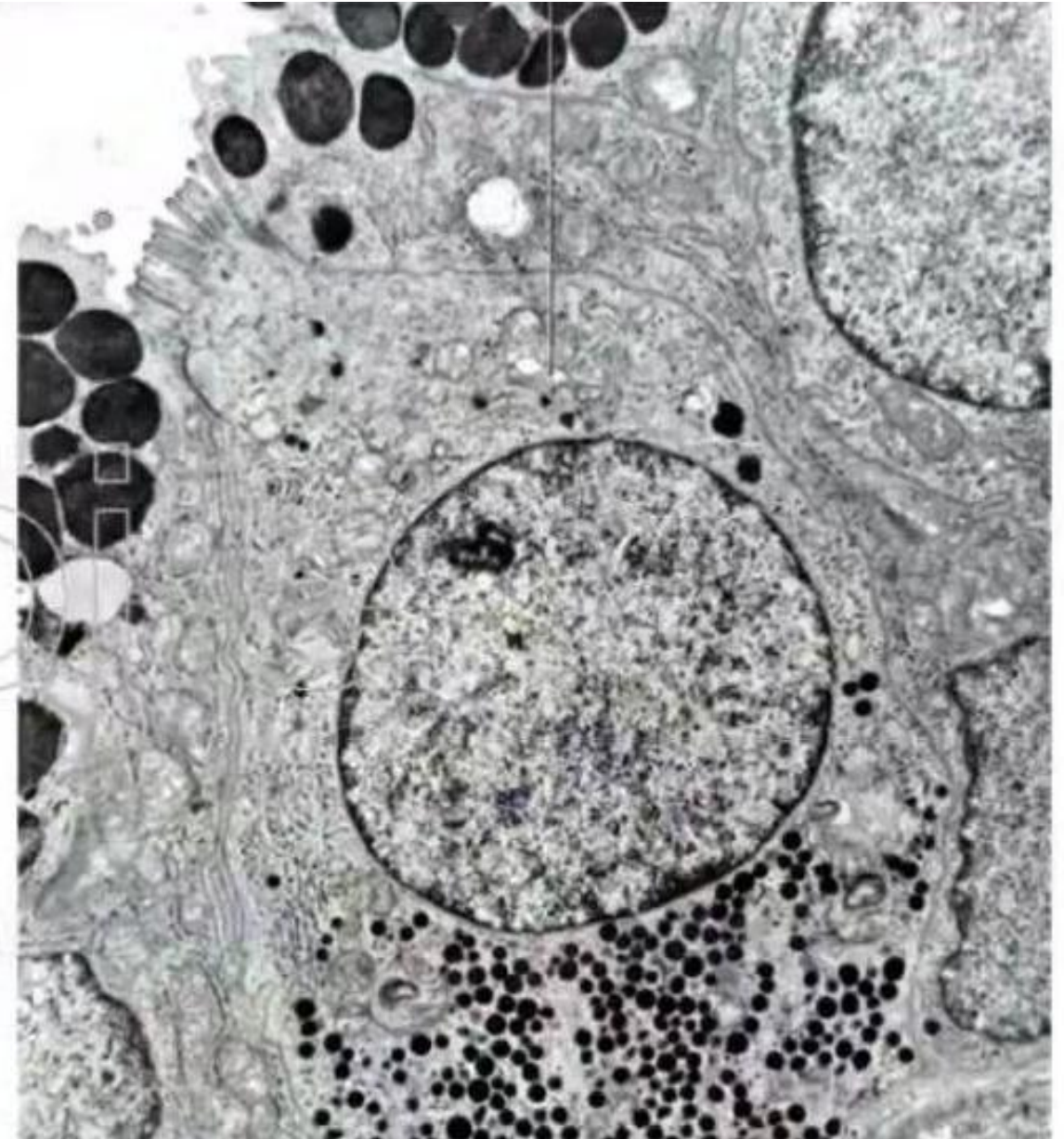
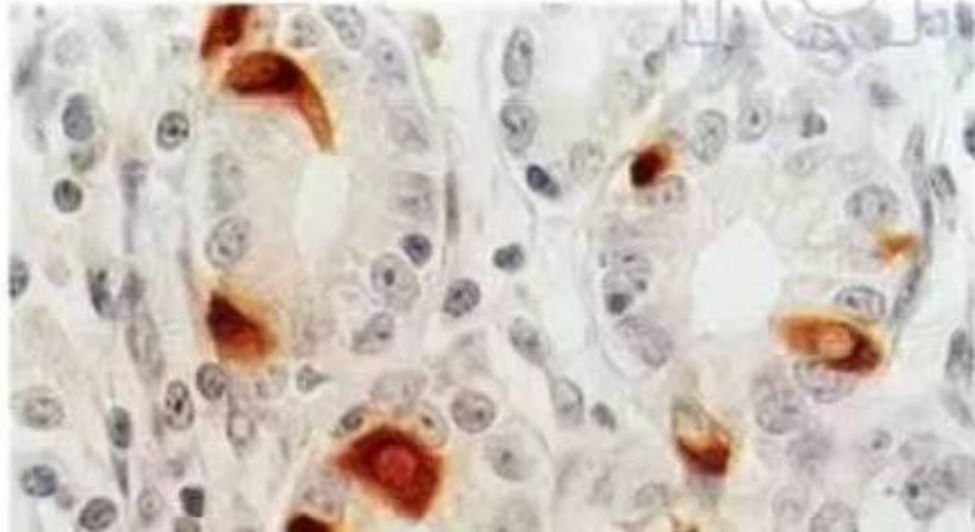
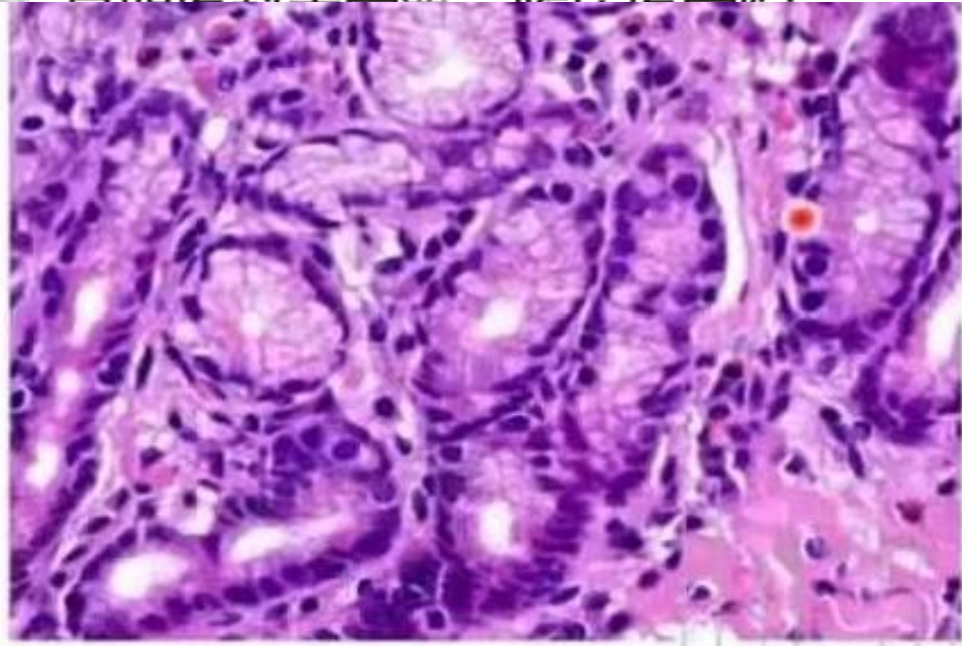
神经内分泌肿瘤（Neuroendocrine neoplasms, **NEN**）是一组起源于**肽能神经元和神经内分泌细胞**的**异质性肿瘤**。

人体神经内分泌细胞的**分布极为广泛**，包括胃肠道、胰腺、胆管和肝、支气管和肺、肾上腺髓质、副神经节、甲状腺C细胞、甲状旁腺、垂体以及其他部位的神经内分泌细胞。

神经内分泌肿瘤**最常见于消化道**。

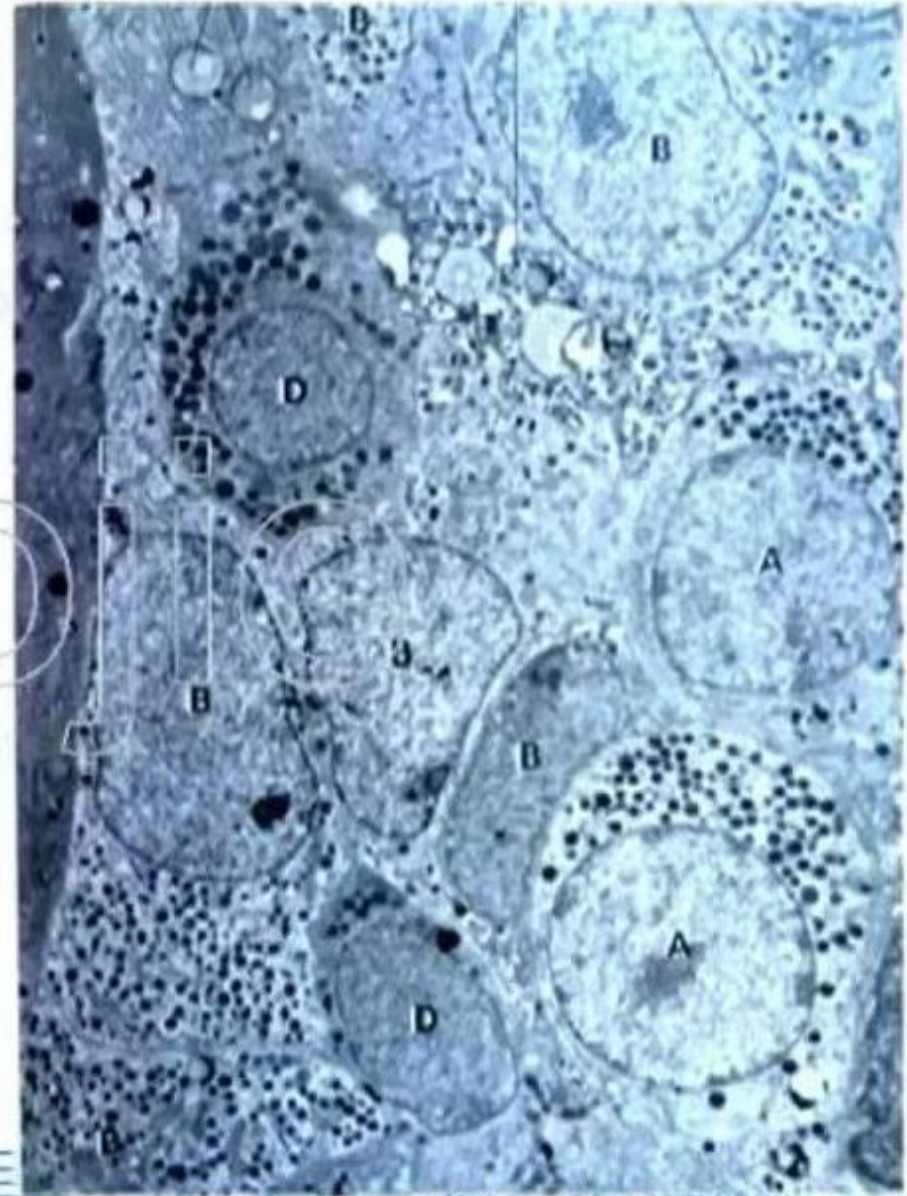
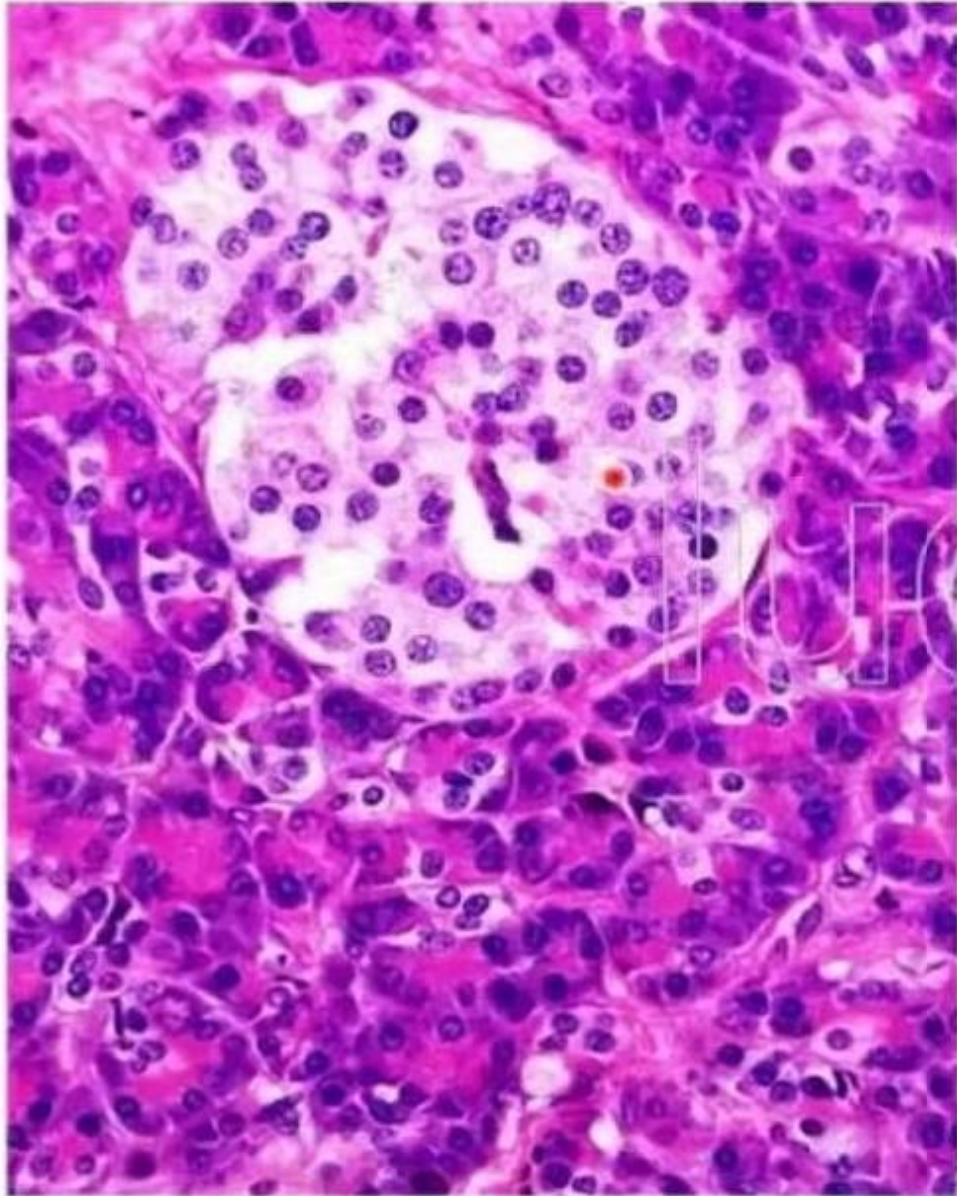
绝大多数神经内分泌肿瘤都有**恶性潜能**。







肽类激素和胺类物质的特点





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胃、肠、胰(神经)内分泌细胞名称和分布(成令忠《组织学》第二版)

细胞名称	分泌物	分布: 胃	分布: 肠	分布: 胰腺
A细胞	胰高血糖素			胰岛
B细胞	胰岛素			胰岛
D细胞	生长抑素	胃窦部为主	小肠、结肠	胰岛
E细胞	脑肠肽			胰岛
EC细胞	5-羟色胺、P物质	全胃	小肠、结肠	胰腺导管
F细胞(PP细胞)	胰多肽		结肠	胰岛
G细胞	胃泌素、脑啡肽	胃窦幽门腺	十二指肠(IG)	
H细胞(D1, VIP)	血管活性肠肽	胃	十二指肠为主	
ECL细胞	组胺	仅见于胃底腺		
I细胞	胆囊收缩素		十二指肠空肠	
K细胞	抑胃肽(GIP)		空回肠	
L细胞	肠高血糖素(GLI)		回肠、结直肠	
M。细胞	胃肠动素		十二指肠空肠	
N细胞	神经降压素		回肠	
P细胞	蛙皮素	幽门		
S细胞	促胰液素		十二指肠空肠	
其他	?	?	?	



2017 WHO classification of pancreatic NEN

Table 6.01 2017 WHO classification and grading of pancreatic neuroendocrine neoplasms (PanNENs)

Classification/grade	Ki-67 proliferation index ^a	Mitotic index ^a
Well-differentiated PanNENs: pancreatic neuroendocrine tumours (PanNETs)		
G1 PanNET	< 3%	< 2
G2 PanNET	3–20%	2–20
G3 PanNET	> 20%	> 20
Poorly differentiated PanNENs: pancreatic neuroendocrine carcinomas (PanNECs)		
PanNEC (G3)	> 20%	> 20
Small cell type		
Large cell type		
Mixed neuroendocrine–non-neuroendocrine neoplasm		
^a The Ki-67 proliferation index is based on the evaluation of ≥ 500 cells in areas of higher nuclear labelling (so-called hotspots). The mitotic index is based on the evaluation of mitoses in 50 high-power fields (HPF; 0.2 mm ² each) in areas of higher density, and is expressed as mitoses per 10 high-power fields (2.0 mm ²). The final grade is determined based on whichever index (Ki-67 or mitotic) places the tumour in the highest grade category. For assessing Ki-67, <u>casual visual estimation (eyeballing) is not recommended; manual counting using printed images is advocated [2267].</u>		



How to **assess proliferation** according to WHO2017? Almost the same as in WHO 2010 (minor changes: cut-off at 3% to include decimal numbers and manual counting advocated)



2019 WHO GEP-NENs 分级标准

分类/分级	分化	核分裂像(个/10 HPF)	Ki-67指数 (%)
NET			
G1	良好	<2	<3
G2	良好	2~20	3~20
G3	良好	>20	>20
NEC			
LCNEC	差	>20	>20
SCNEC	差	>20	>20
MiNEN	差/良好	不一	不一



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病理诊断：

- **（ 肝脏穿刺活检标本 ）**

神经内分泌瘤（ NET , G2 ） ， 请临床首先排除转移性。

后期诊疗证实：肿瘤原发灶位于胰腺。



- **提示1：尊重形态学**
- **提示2：免疫组化标记提示肿瘤的组织学类型**
- GEP-NEN组织学分级必须严格按照WHO标准执行
- 核分裂像计数与Ki-67计数总体是一致的，有时核分裂像计数略低于Ki-67计数
- 组织学分级原则：就高不就低





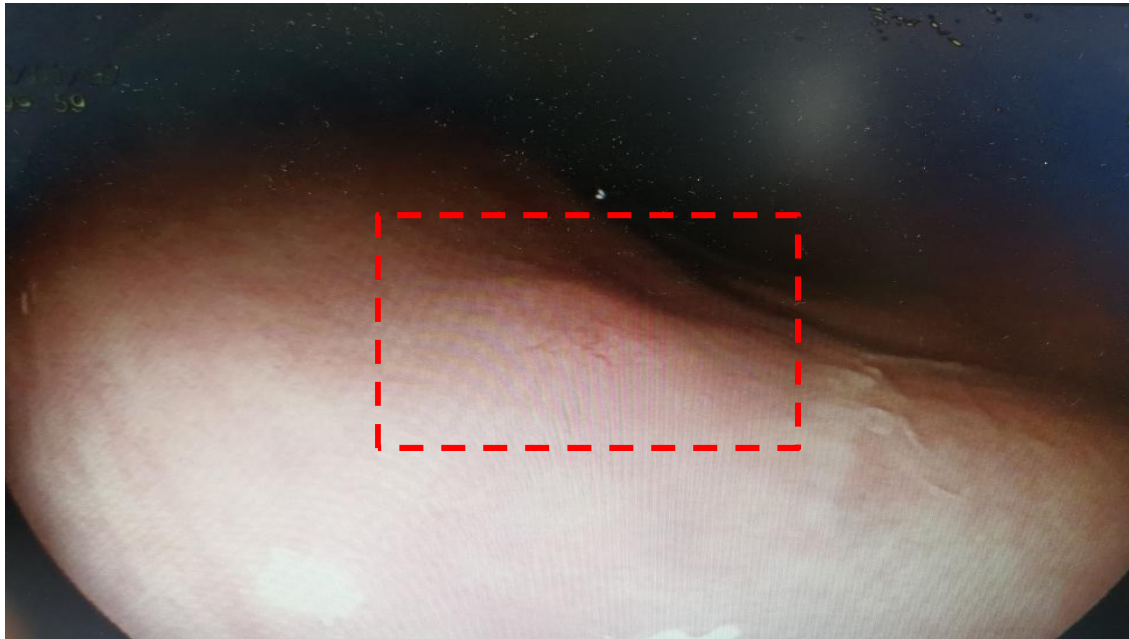
免疫组化的作用与意义-判断肿瘤组织类型/来源 病例3

- 女性，66岁，体检行肠镜检查，发现“结、直肠多发息肉”
- 肠镜所见：
 1. 直肠见两个直径为0.3cm “息肉”
 2. 升结肠近肝曲一直径为0.4cm 息肉
- 肉眼所见：灰白色小组织三点，直径约为0.3cm



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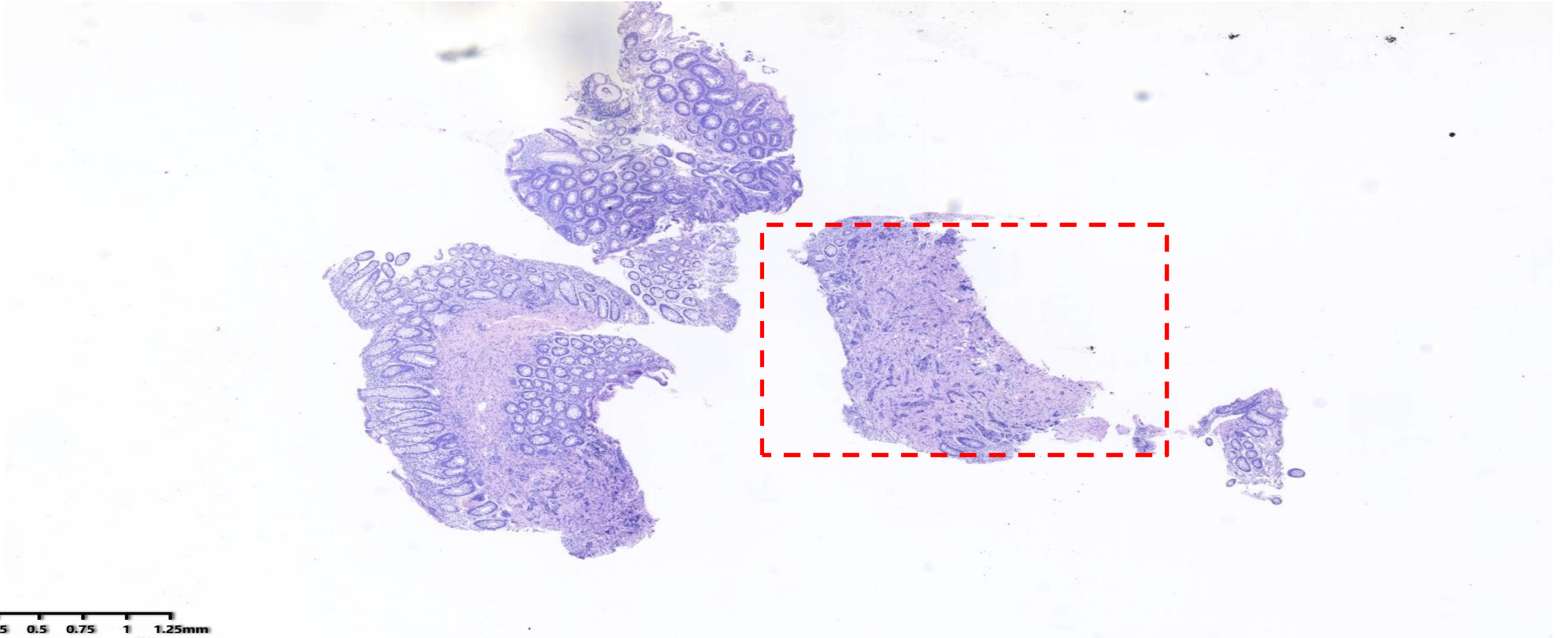
肠镜检查-直肠图片





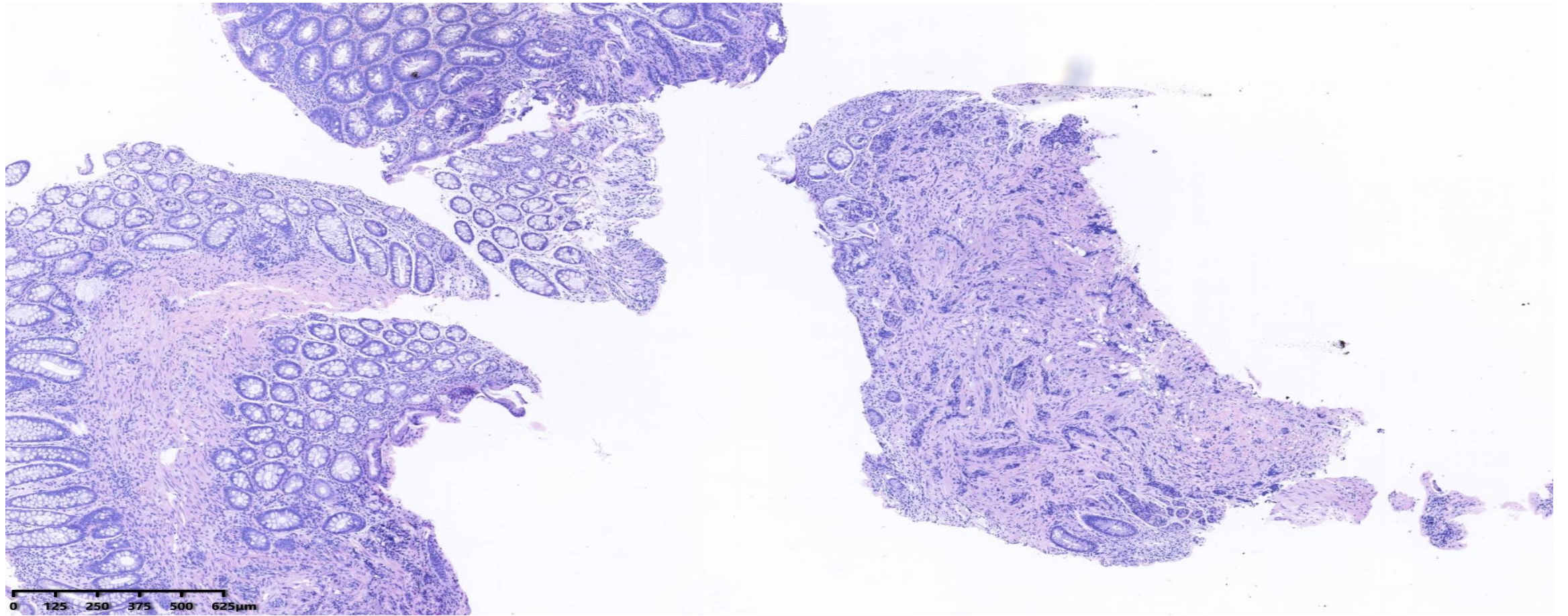
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HE染色



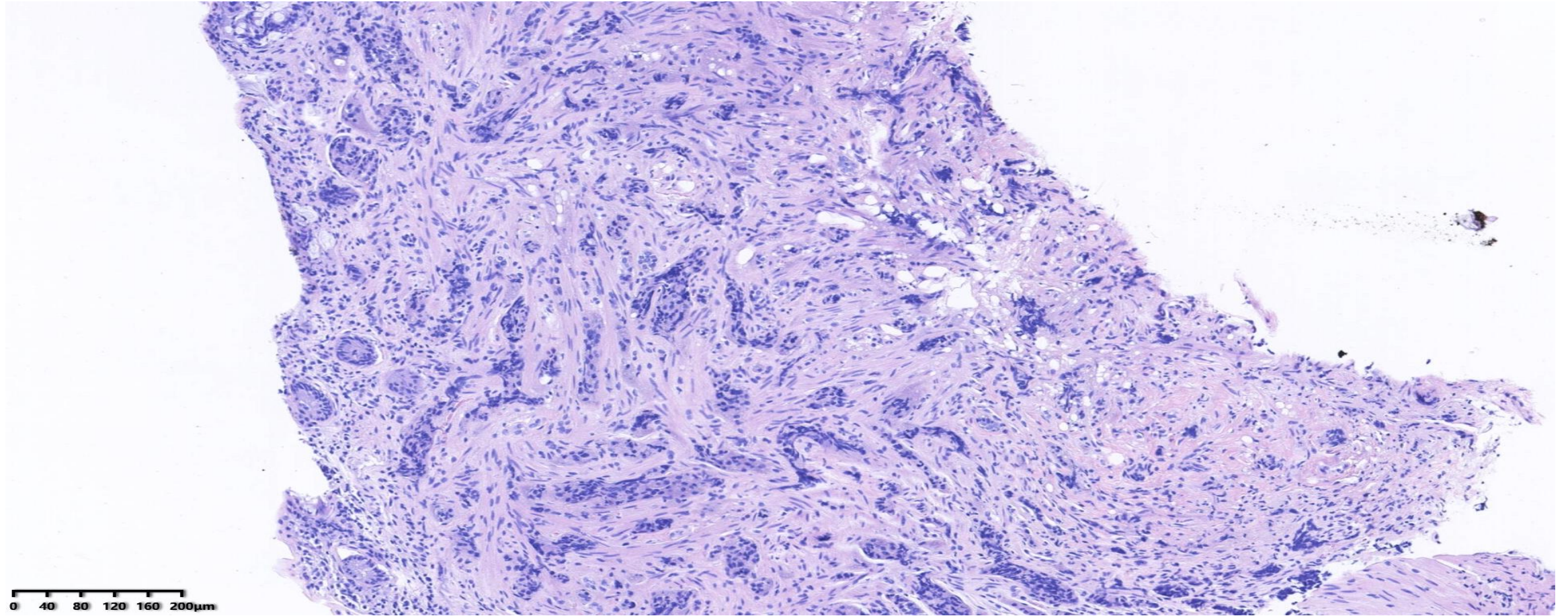


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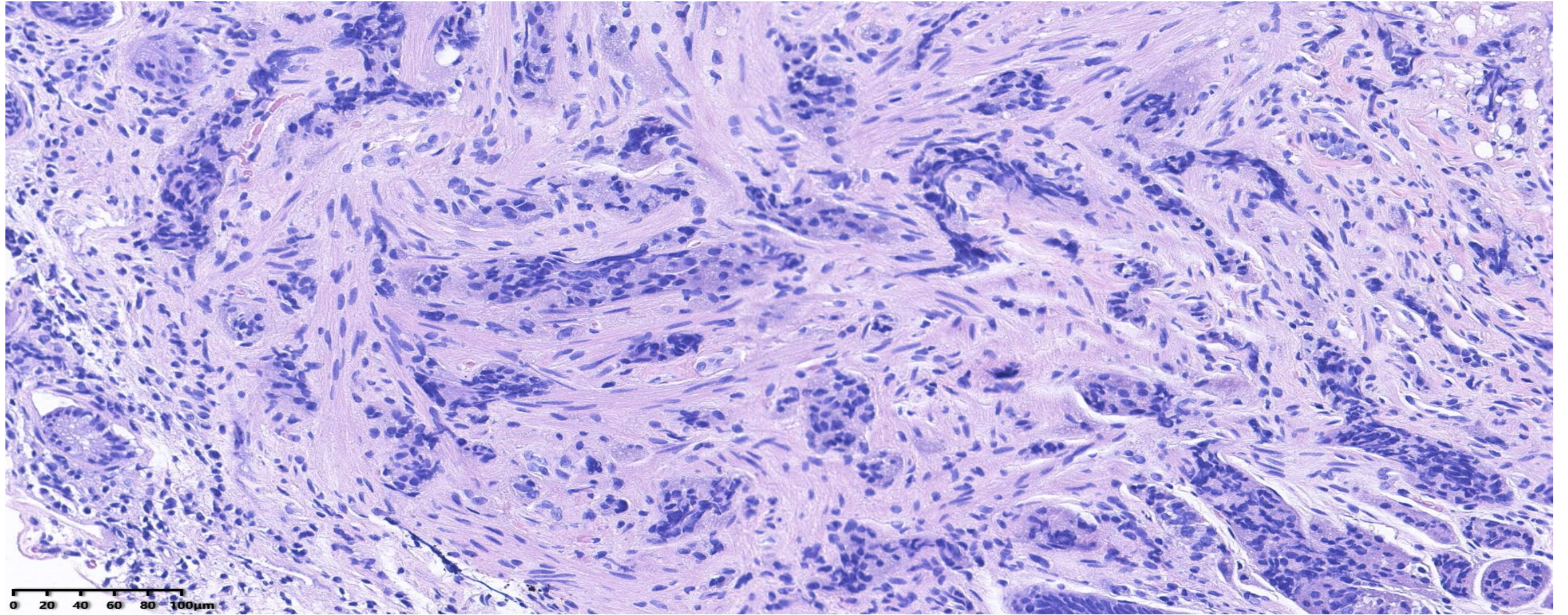


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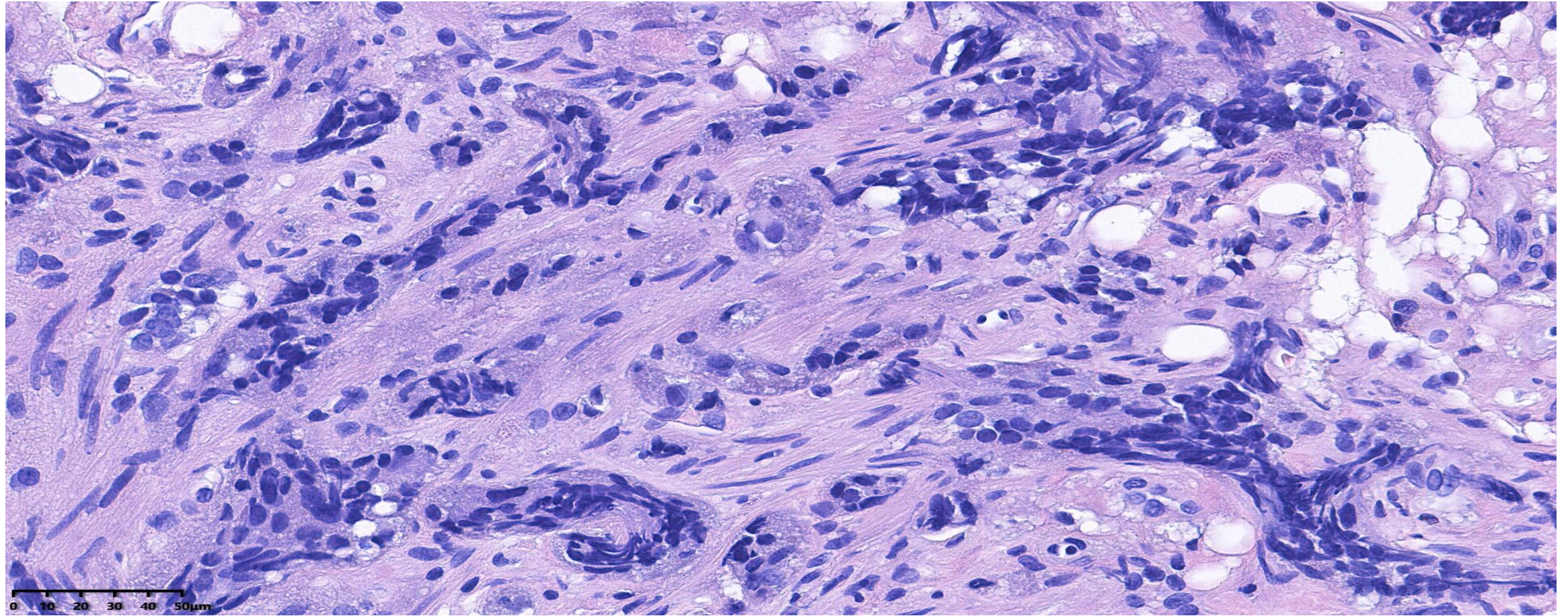


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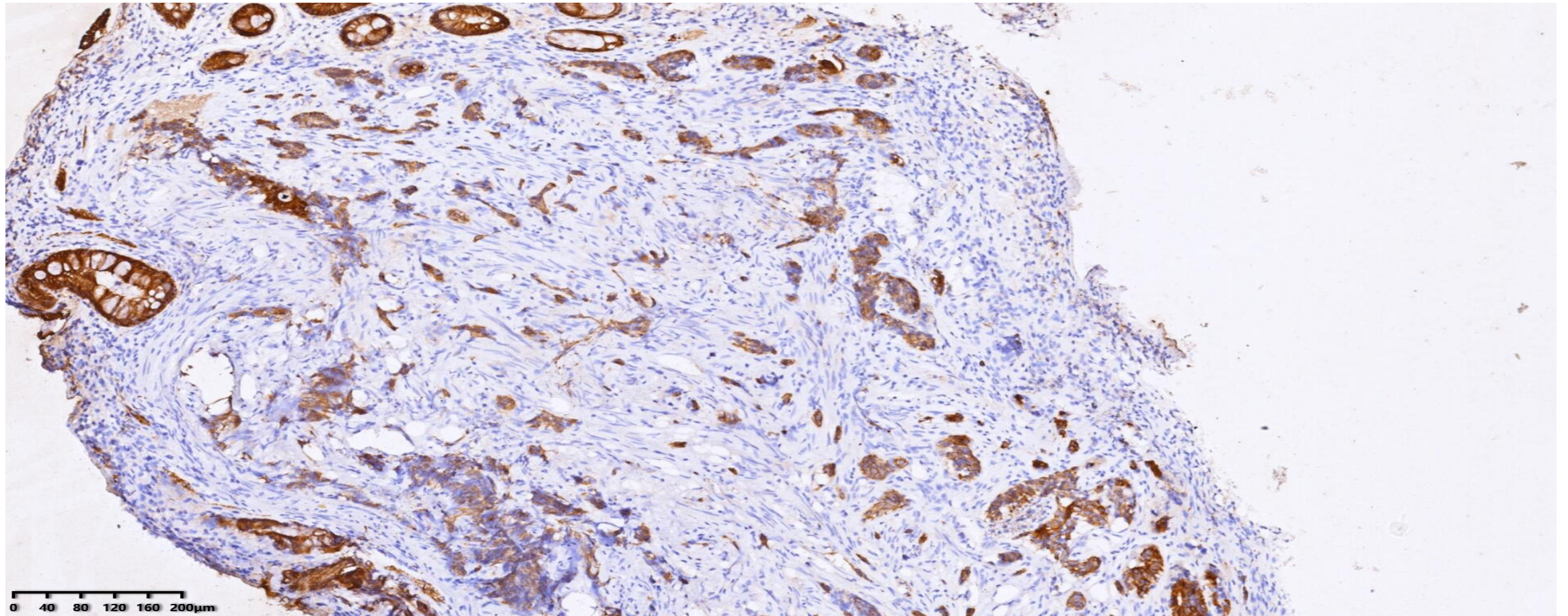
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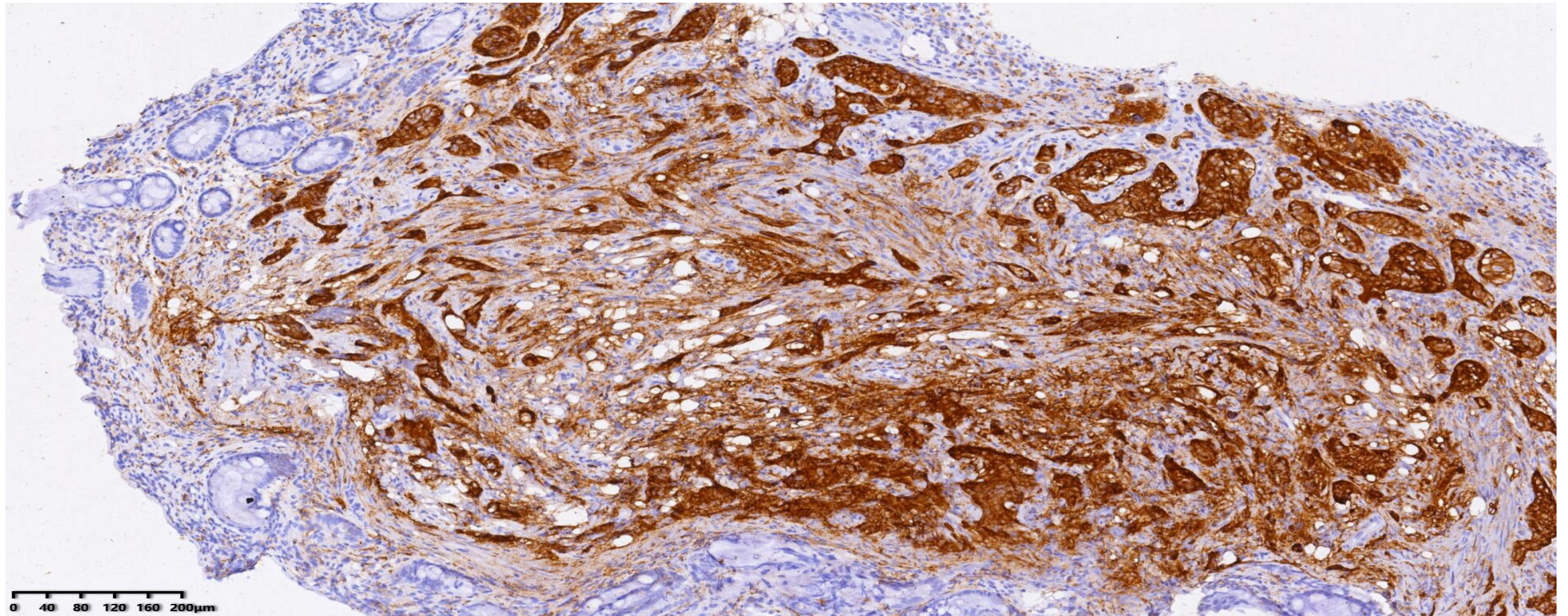
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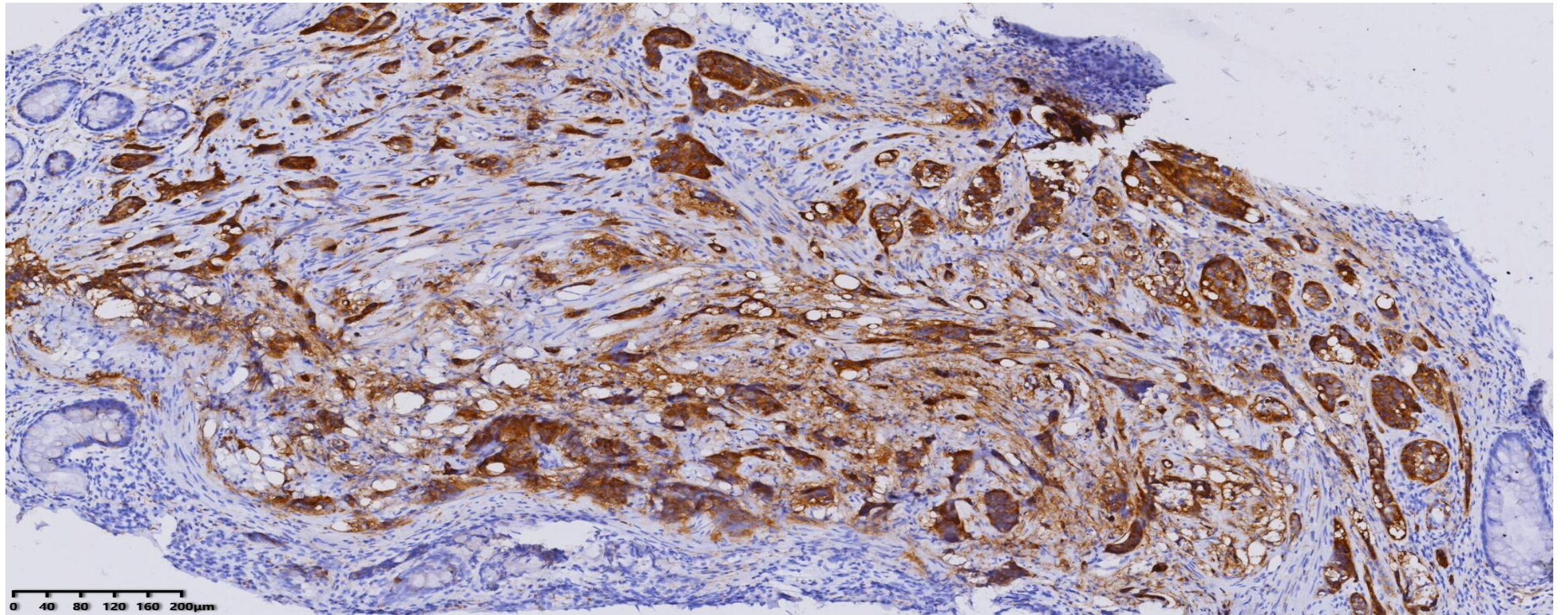
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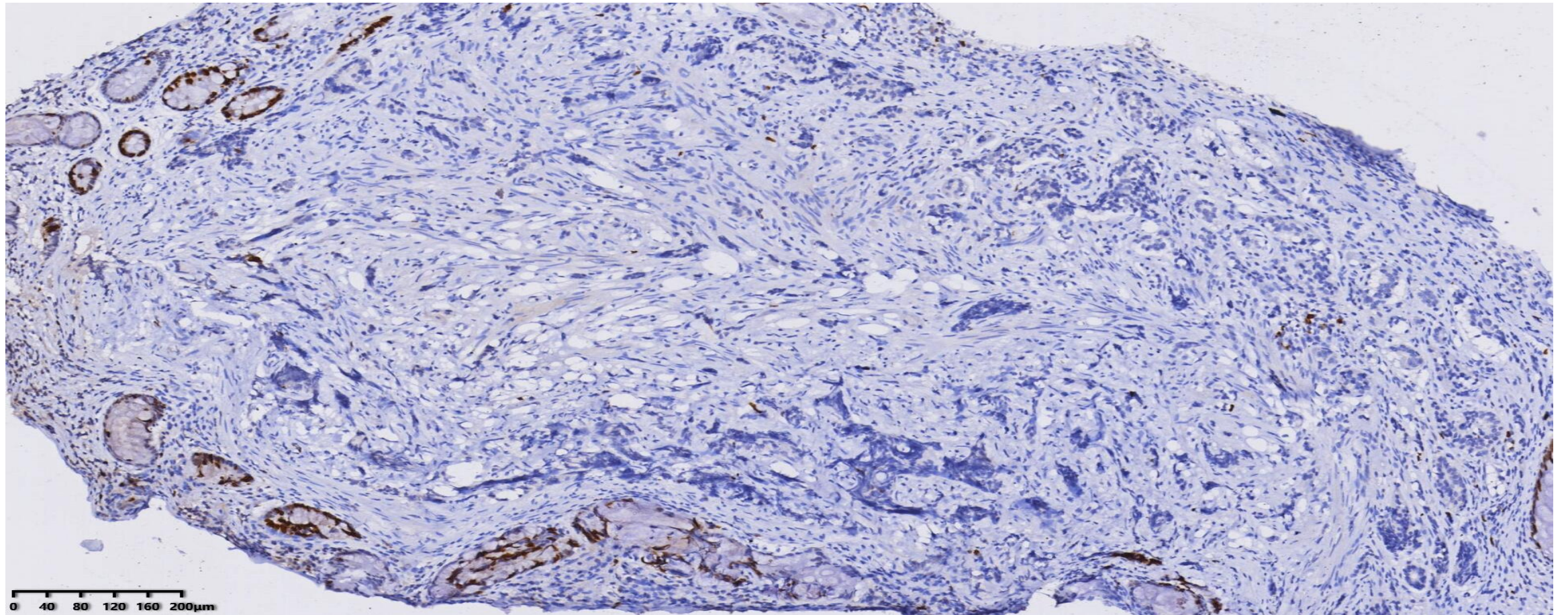
Syn





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Ki-67





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病理诊断：

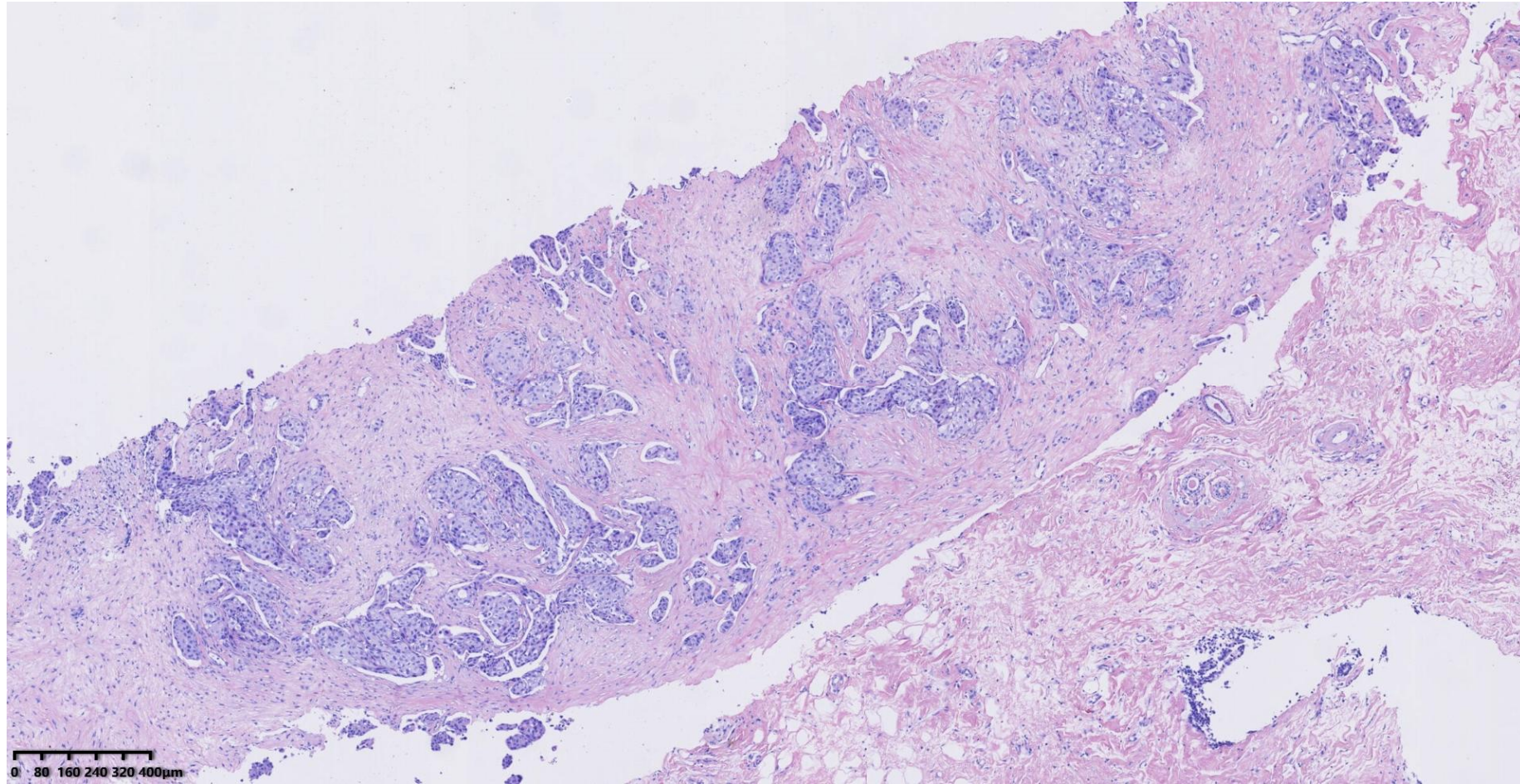
- (直肠活检) 1. 神经内分泌瘤 (NET , G1) , 肿瘤大小 : 0.3 cm × 0.3 cm × 0.3 cm , 核分裂象 < 1个/10HPF , 神经及脉管未见侵犯 , 基底切缘见肿瘤细胞。**
- 2. 管状腺瘤 , 腺体及上皮呈低级别上皮内瘤变**



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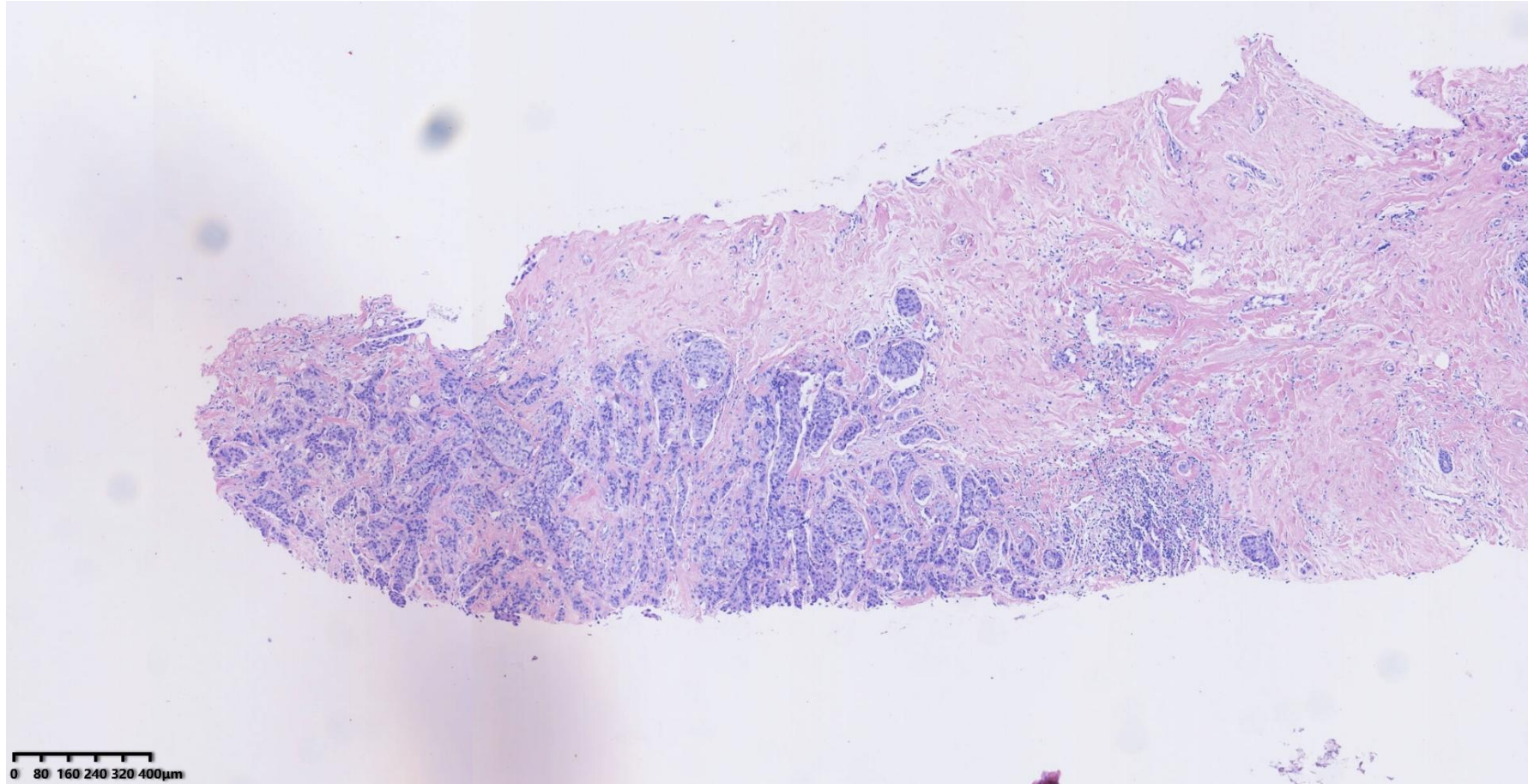
免疫组化的作用与意义-判断肿瘤良恶性-病例4

- 乳腺病例：患者女性，75岁，右乳包块穿刺标本



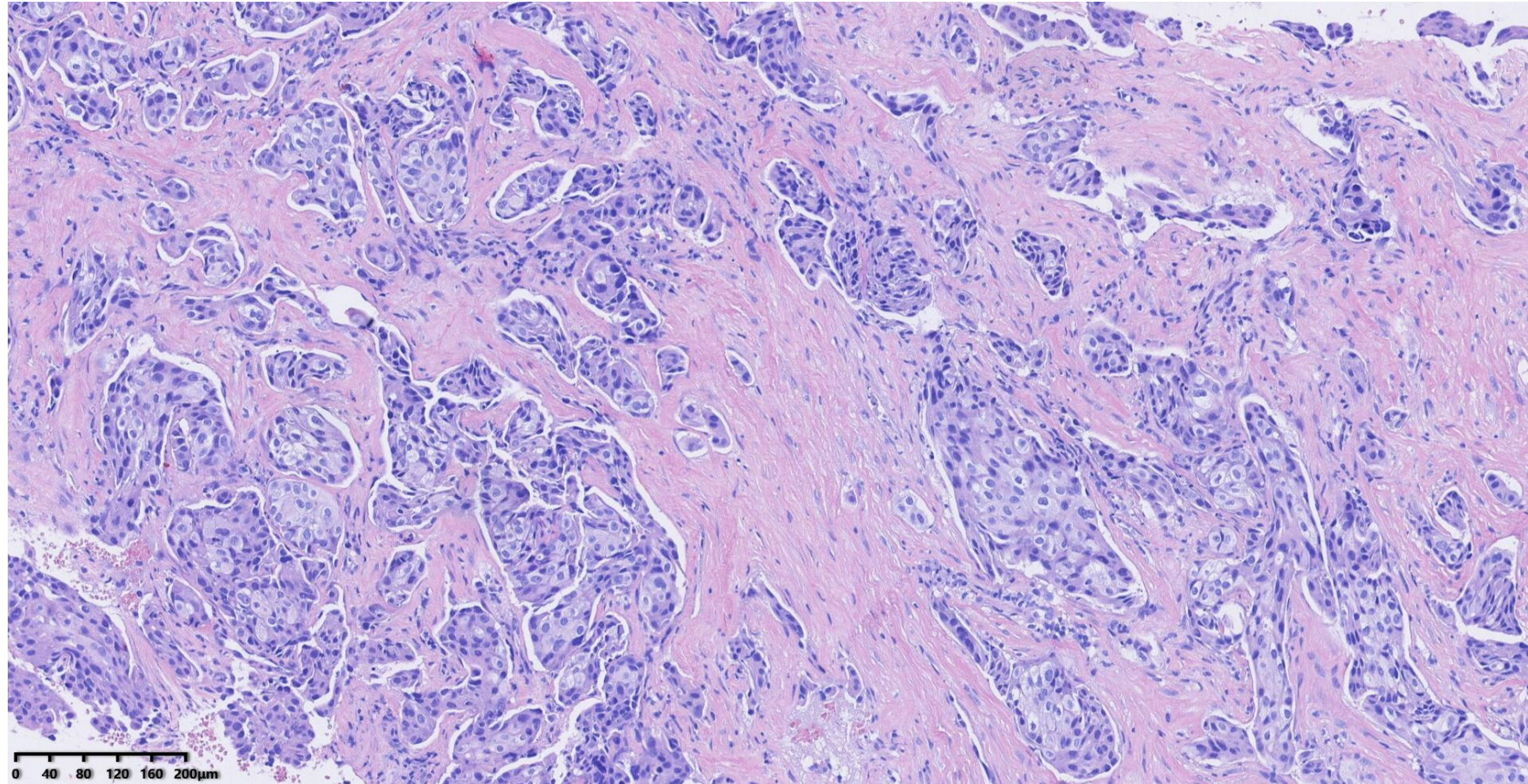


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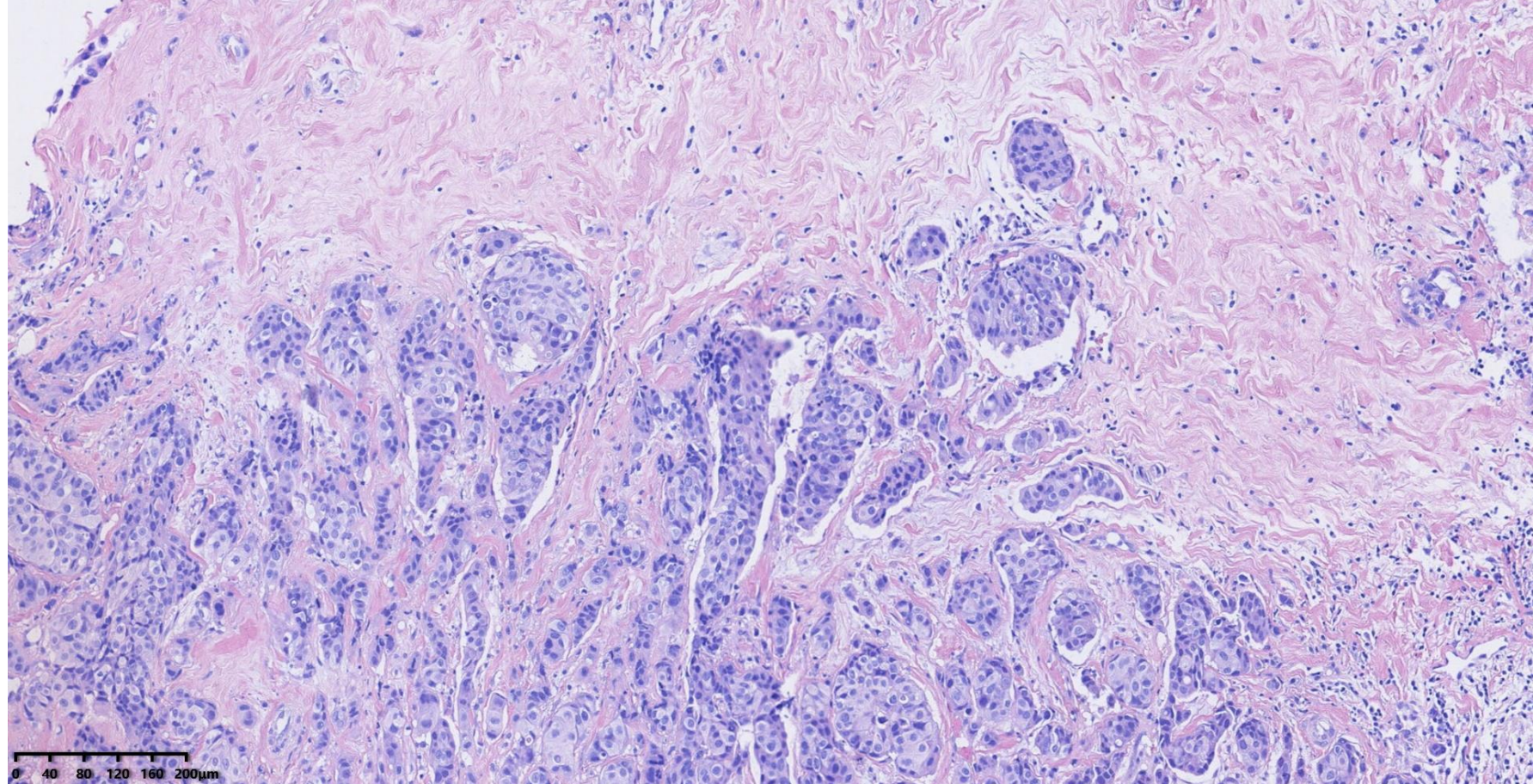


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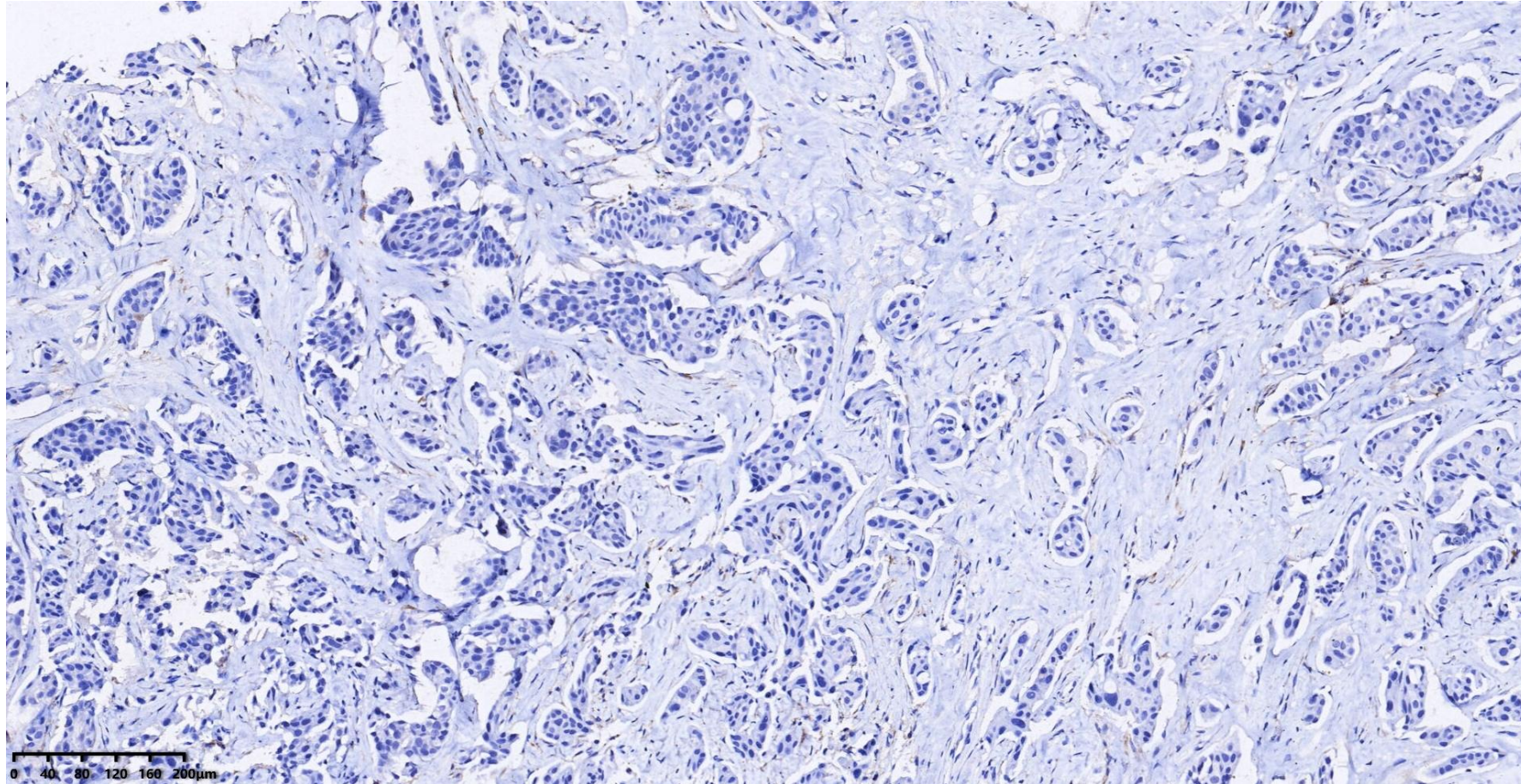
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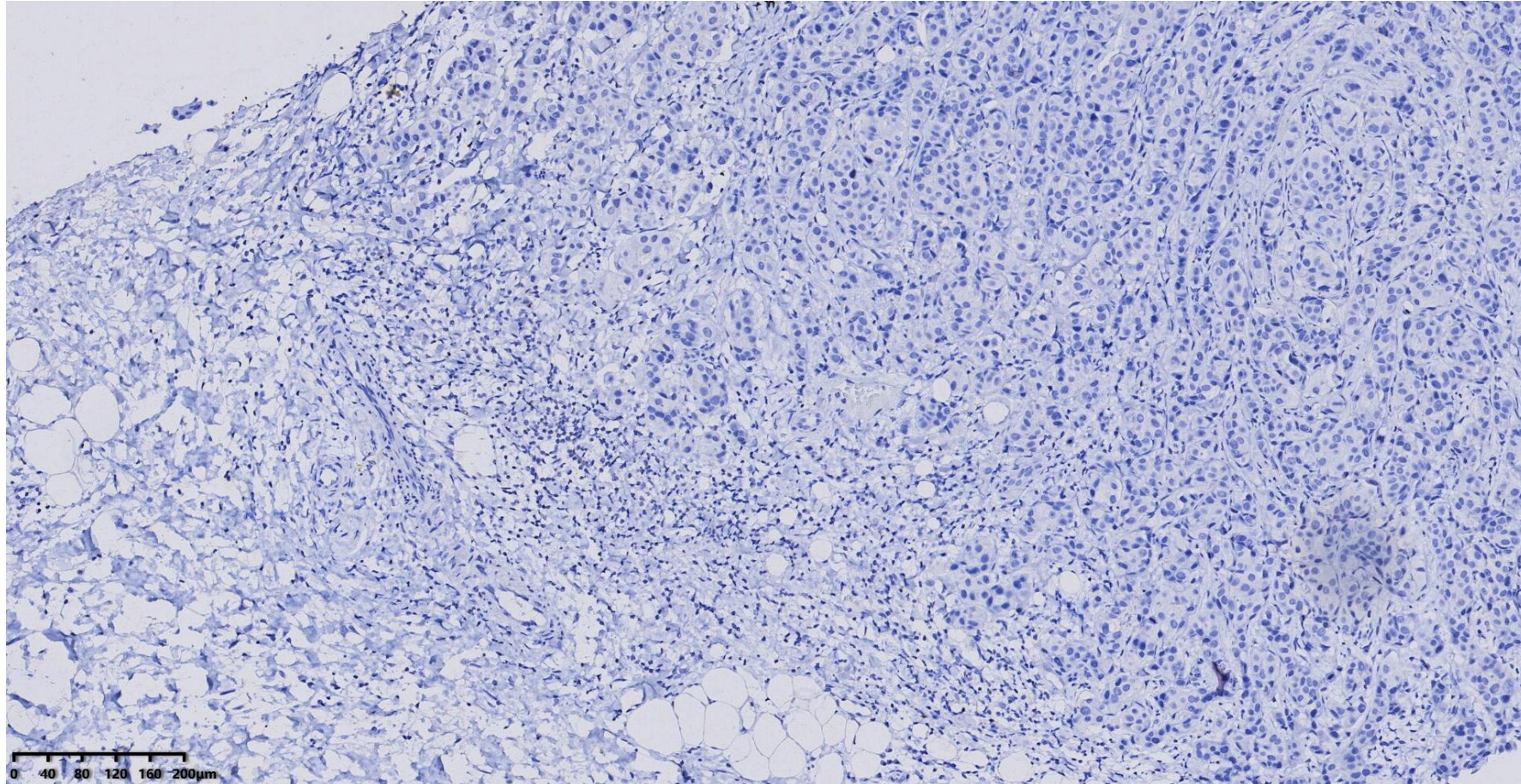
CK5/6





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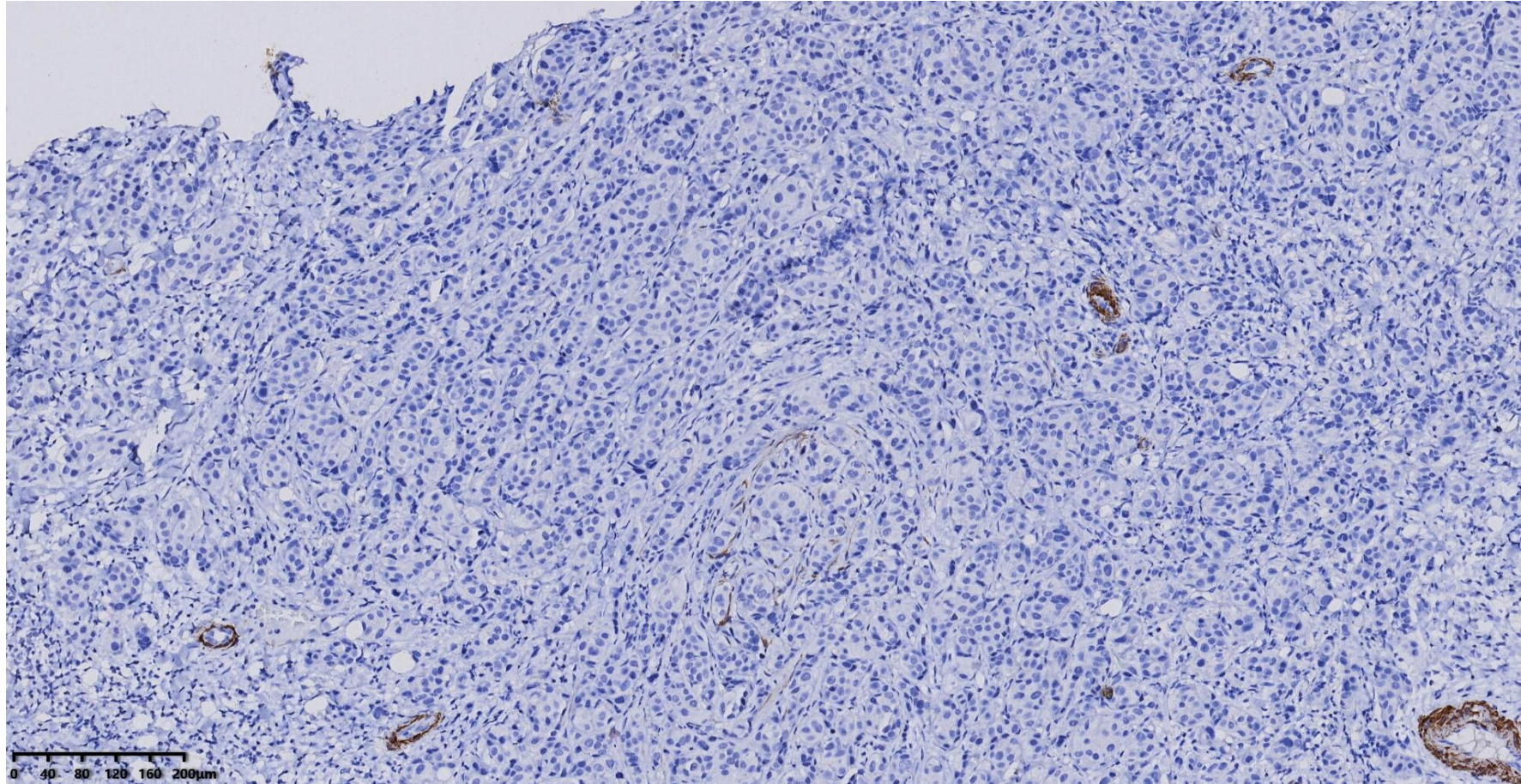
P63





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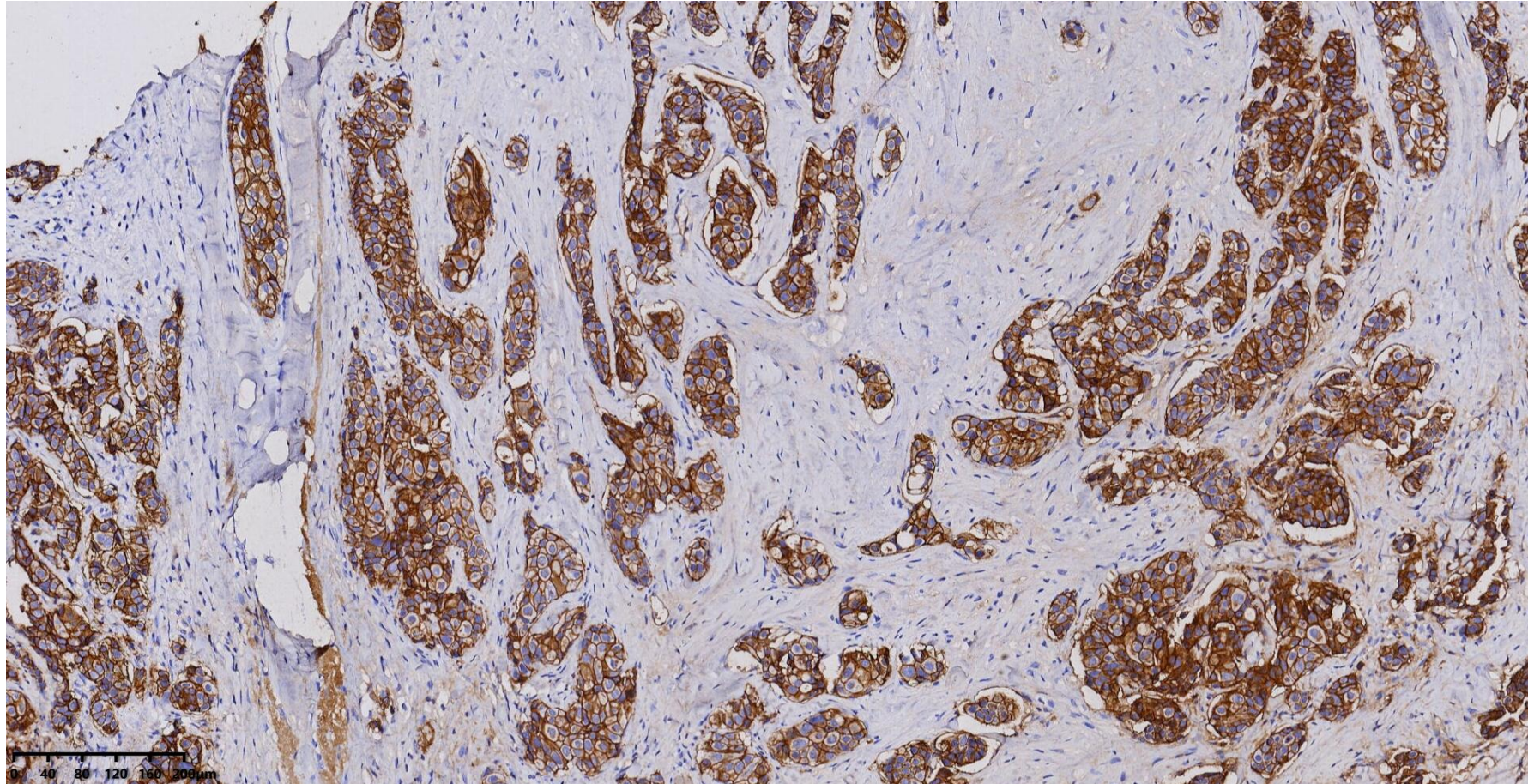
SMMHC





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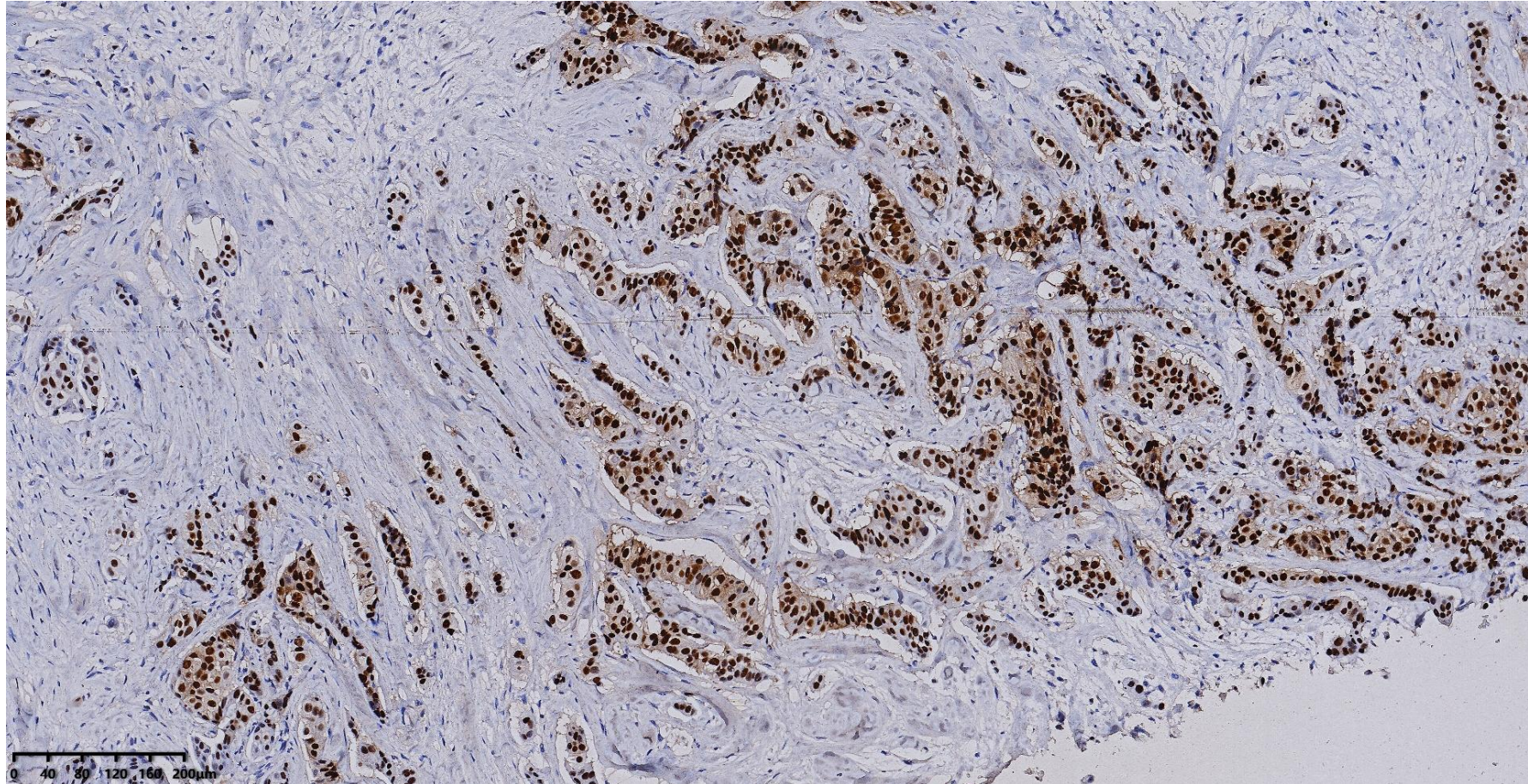
E-cad





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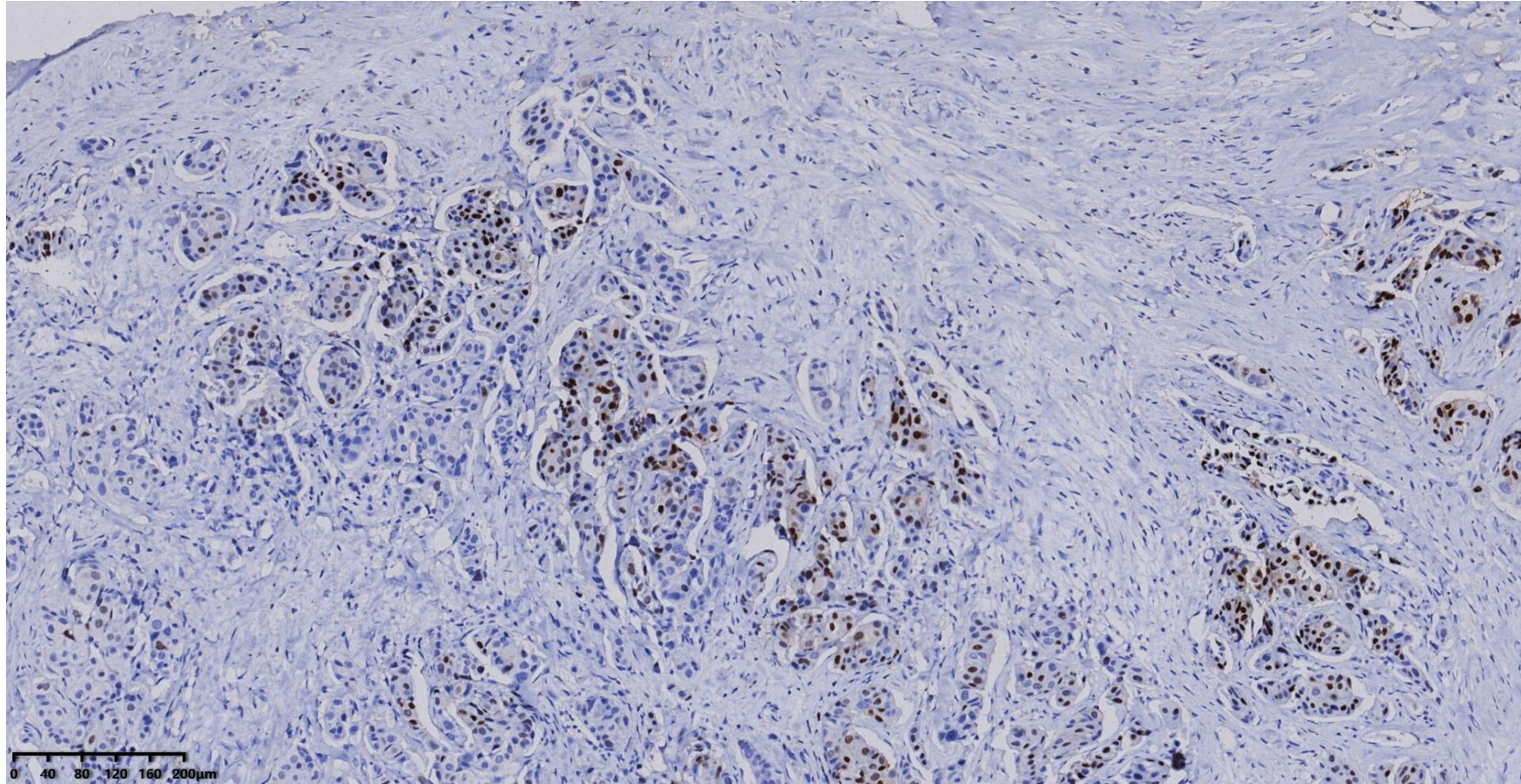
ER





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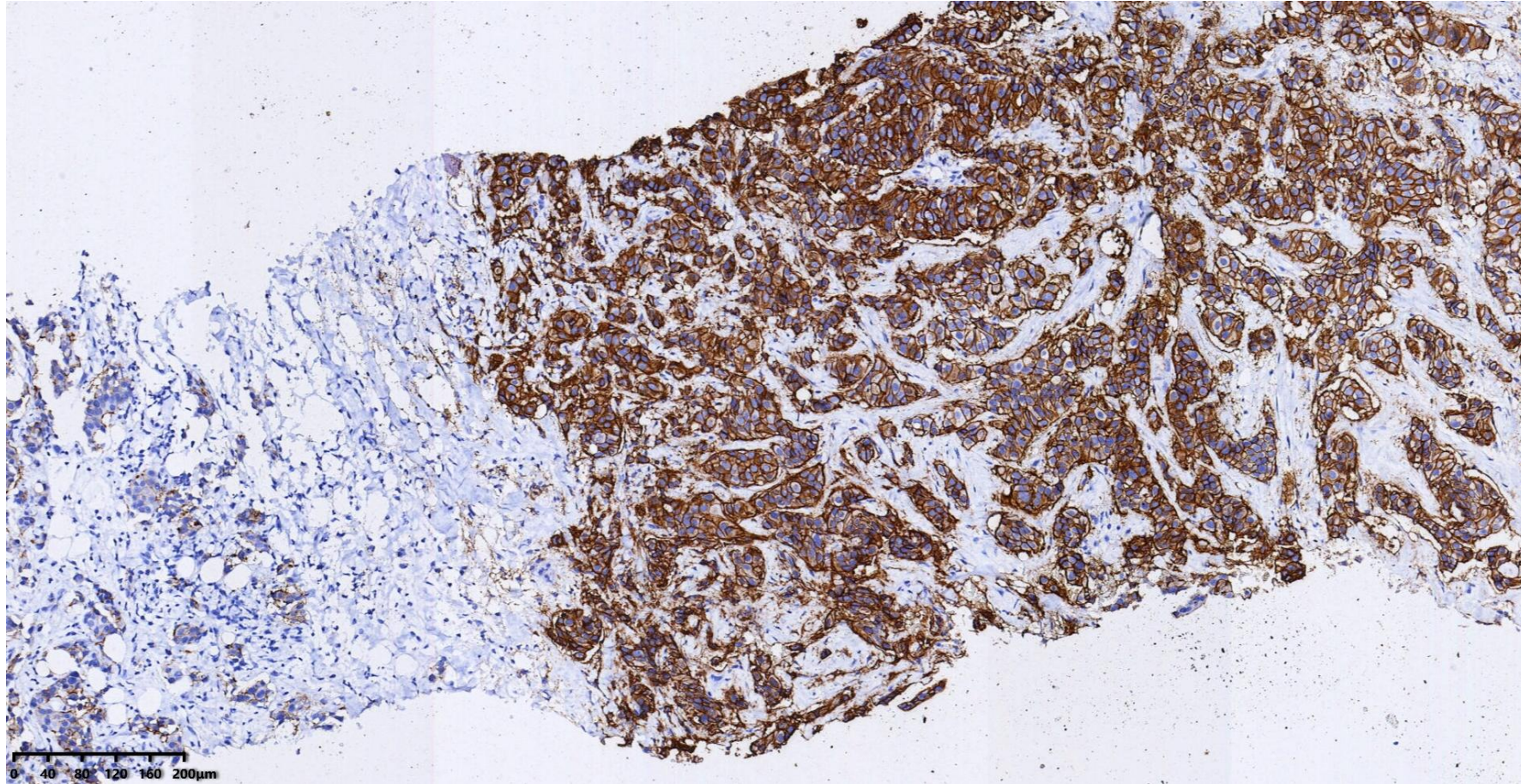
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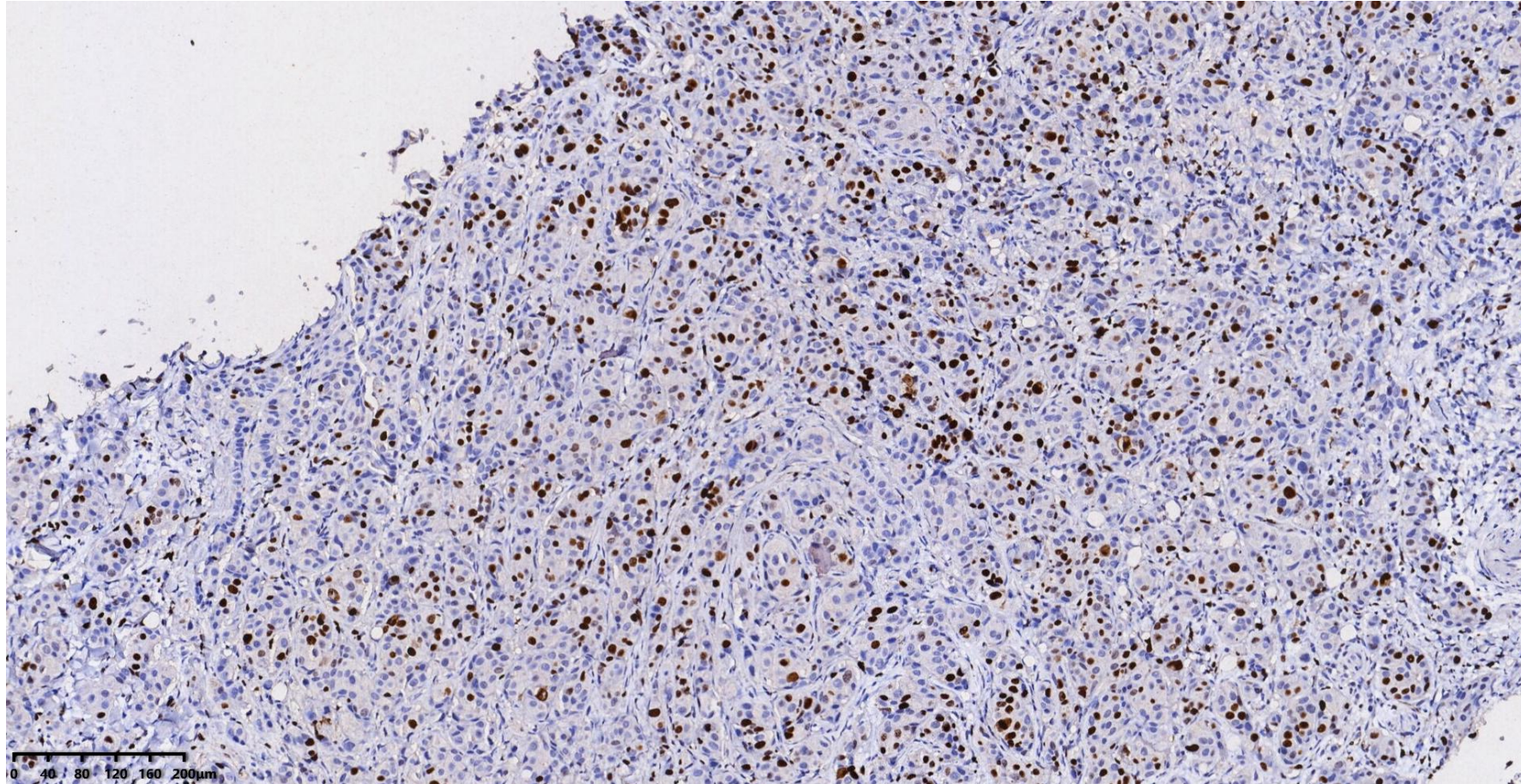
HER-2





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Ki-67





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病理诊断：

(右乳穿刺活检) 浸润性乳腺癌，非特殊型，WHO II级，NOS。

免疫组化结果作详细标注：

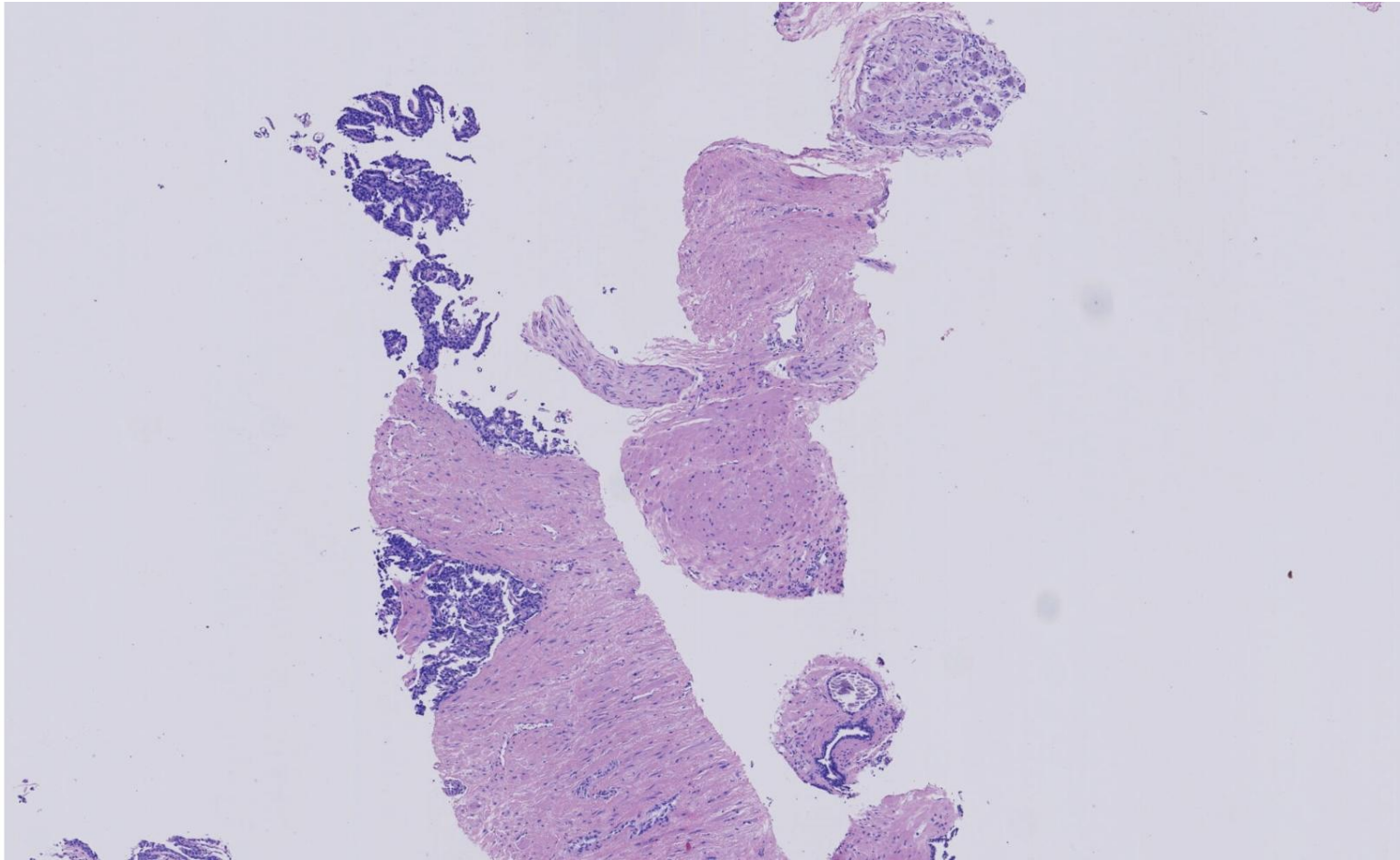
CK5/6(-), P63(-), SMMHC(-), E-cad(+), P120(+ , 细胞膜) , ER(+, 90%, 着色强度：强), PR (+, 30%, 着色强度：中强), HER-2(3+), Ki-67(+, 40%).....



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免疫组化的作用与意义-判断肿瘤良恶性-病例5

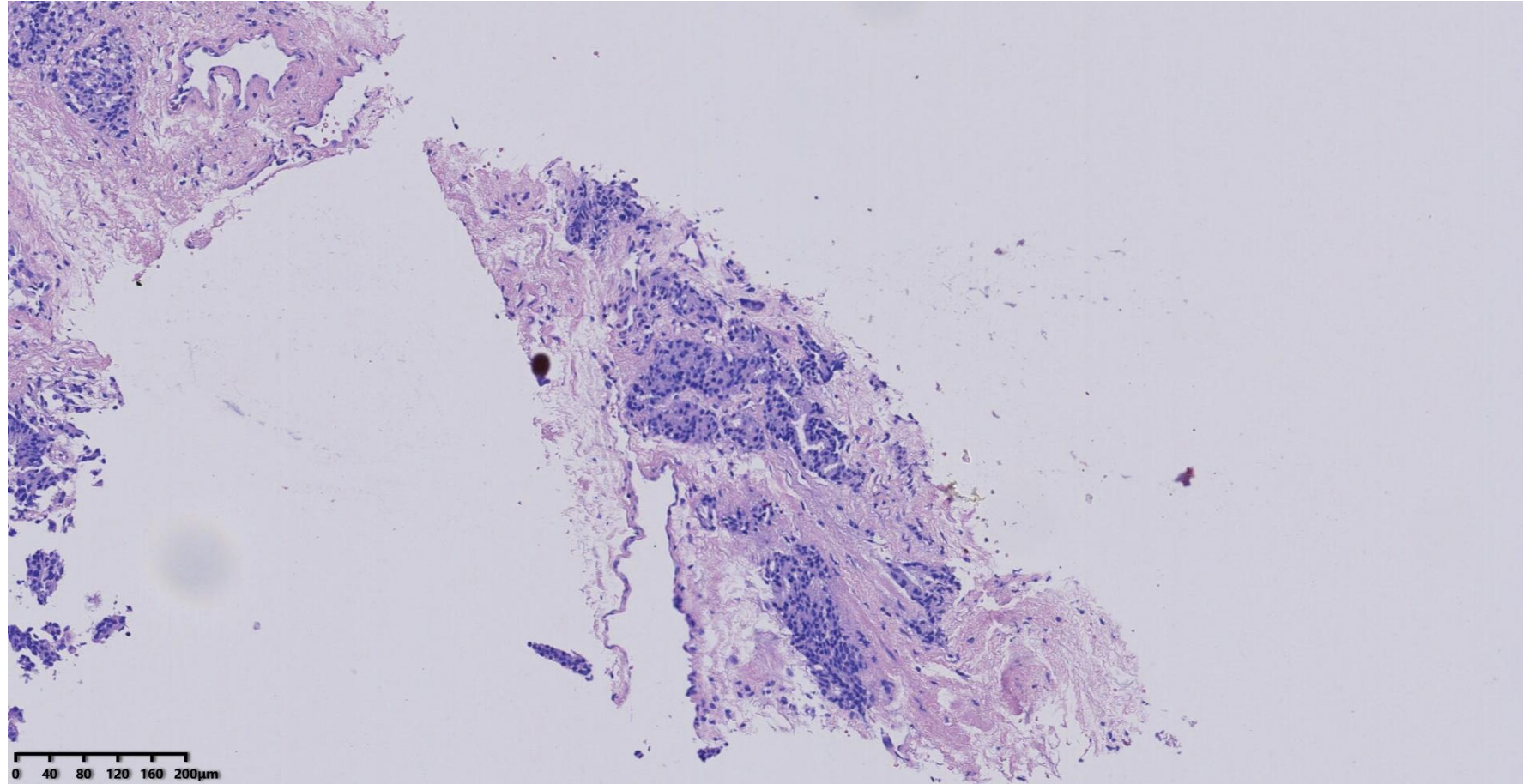
- 前列腺病例：患者男性，76岁，前列腺穿刺标本



0 80 160 240 320 400μm

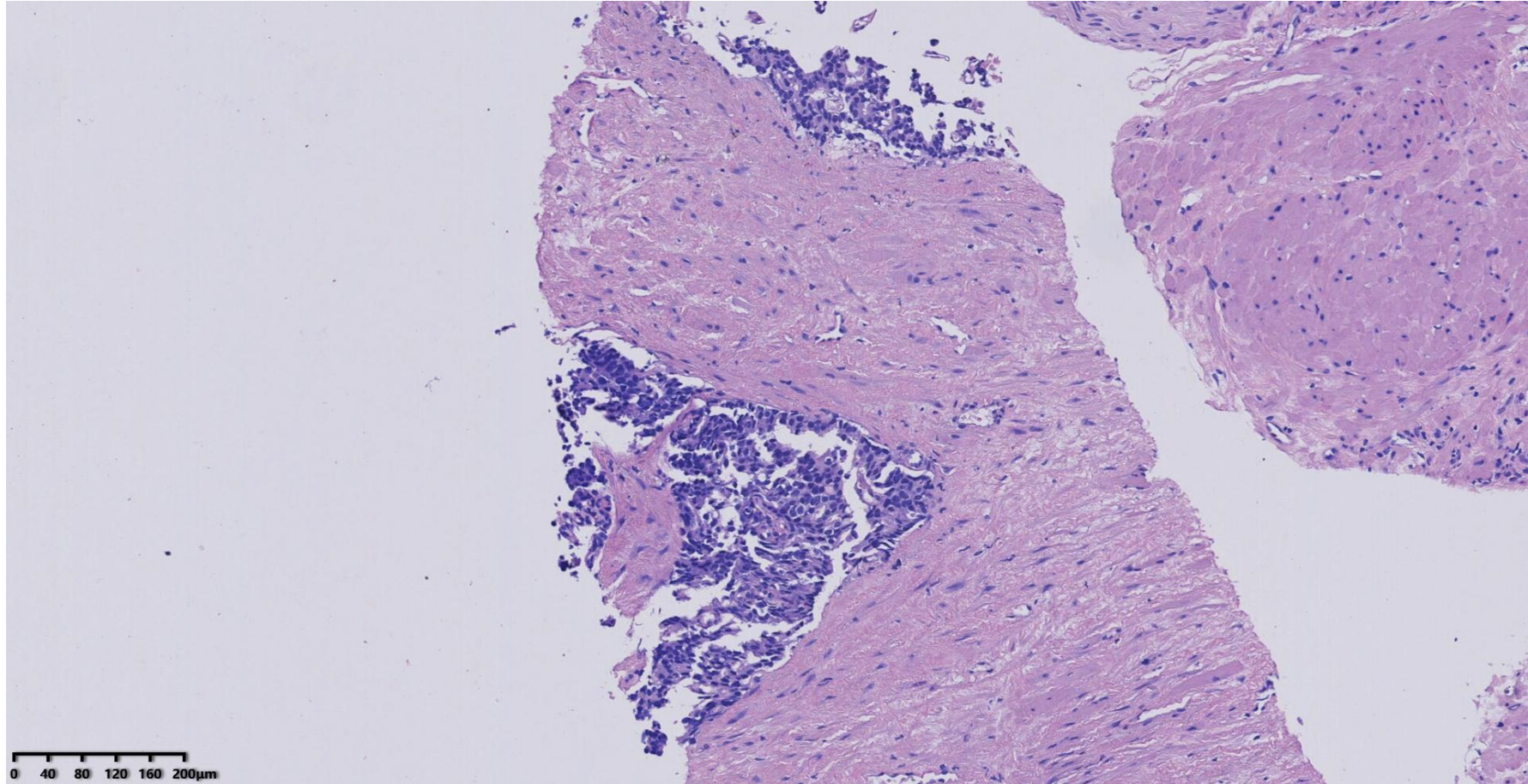


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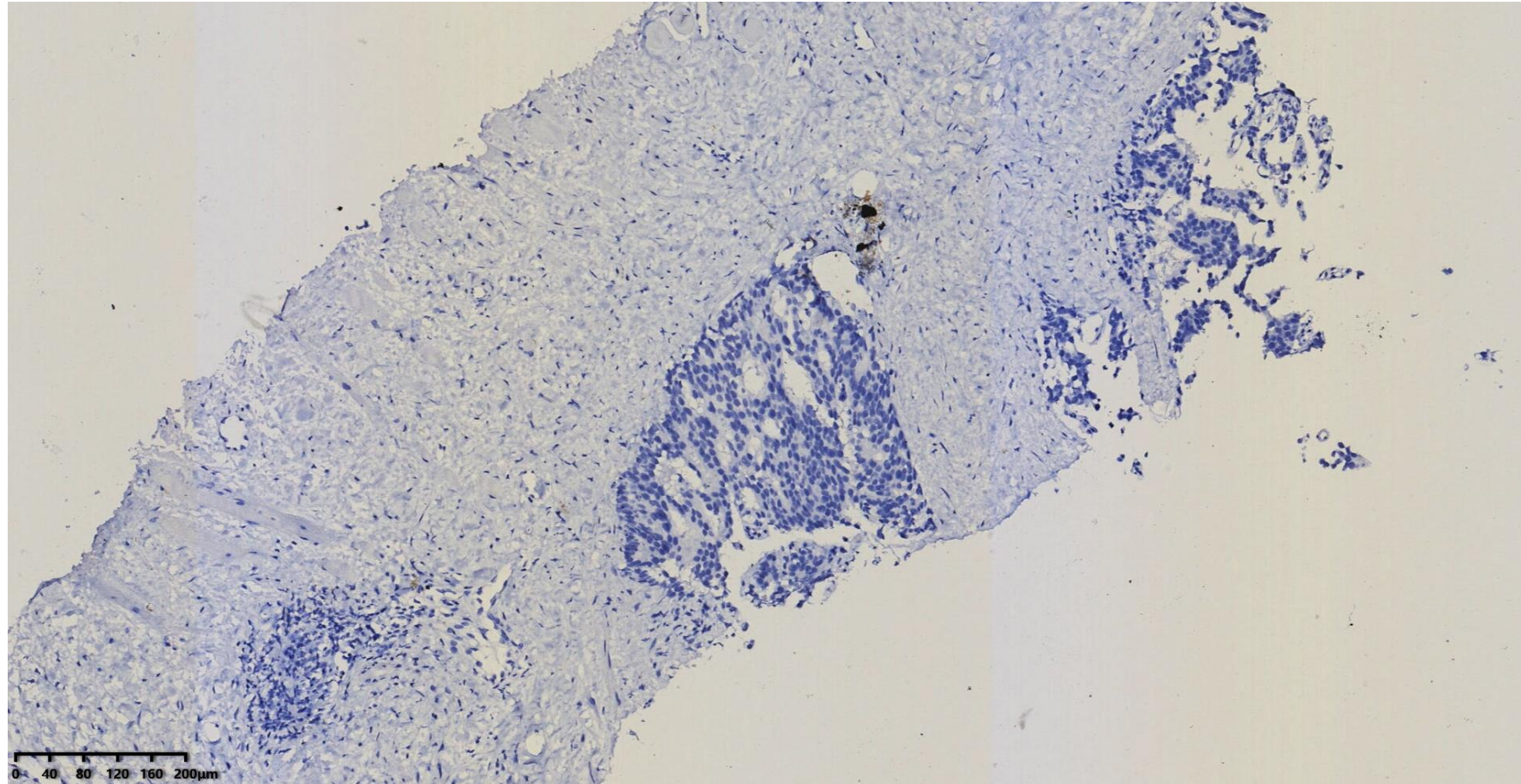
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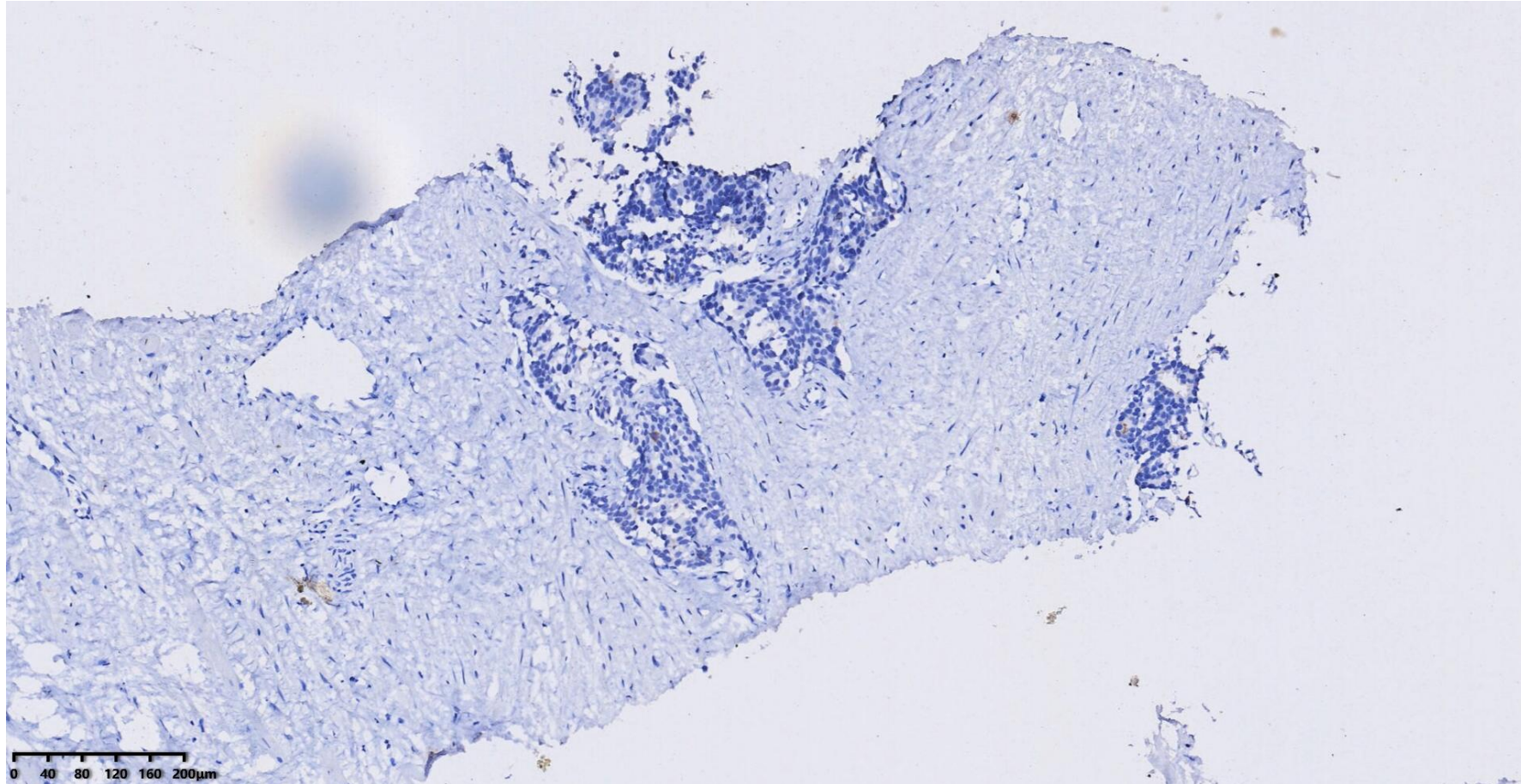
P63





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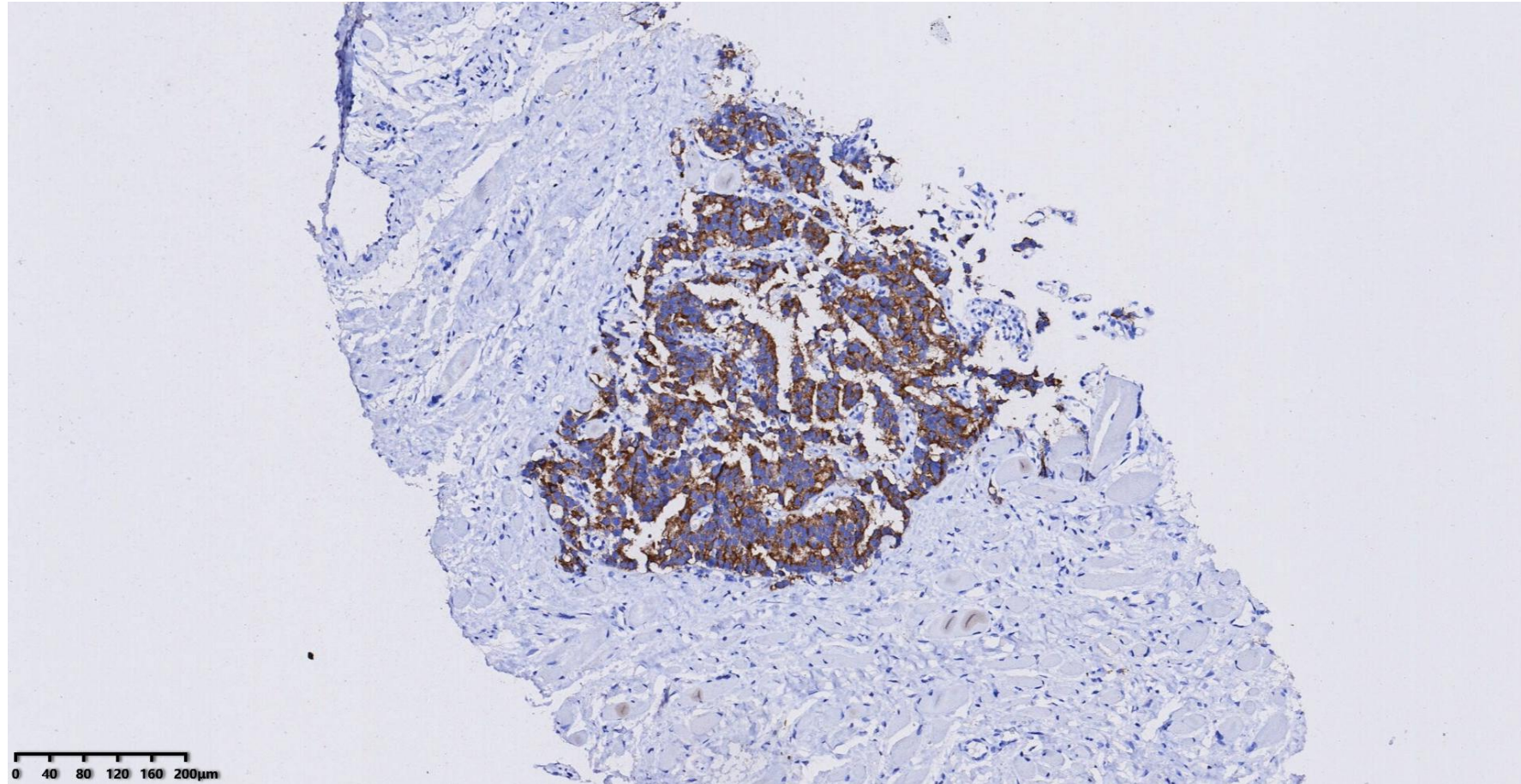
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P504S





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病理诊断：

(前列腺穿刺活检) 前列腺腺癌，Gleason 评分：4+4=8，分级分组：4，肿瘤约占30%。

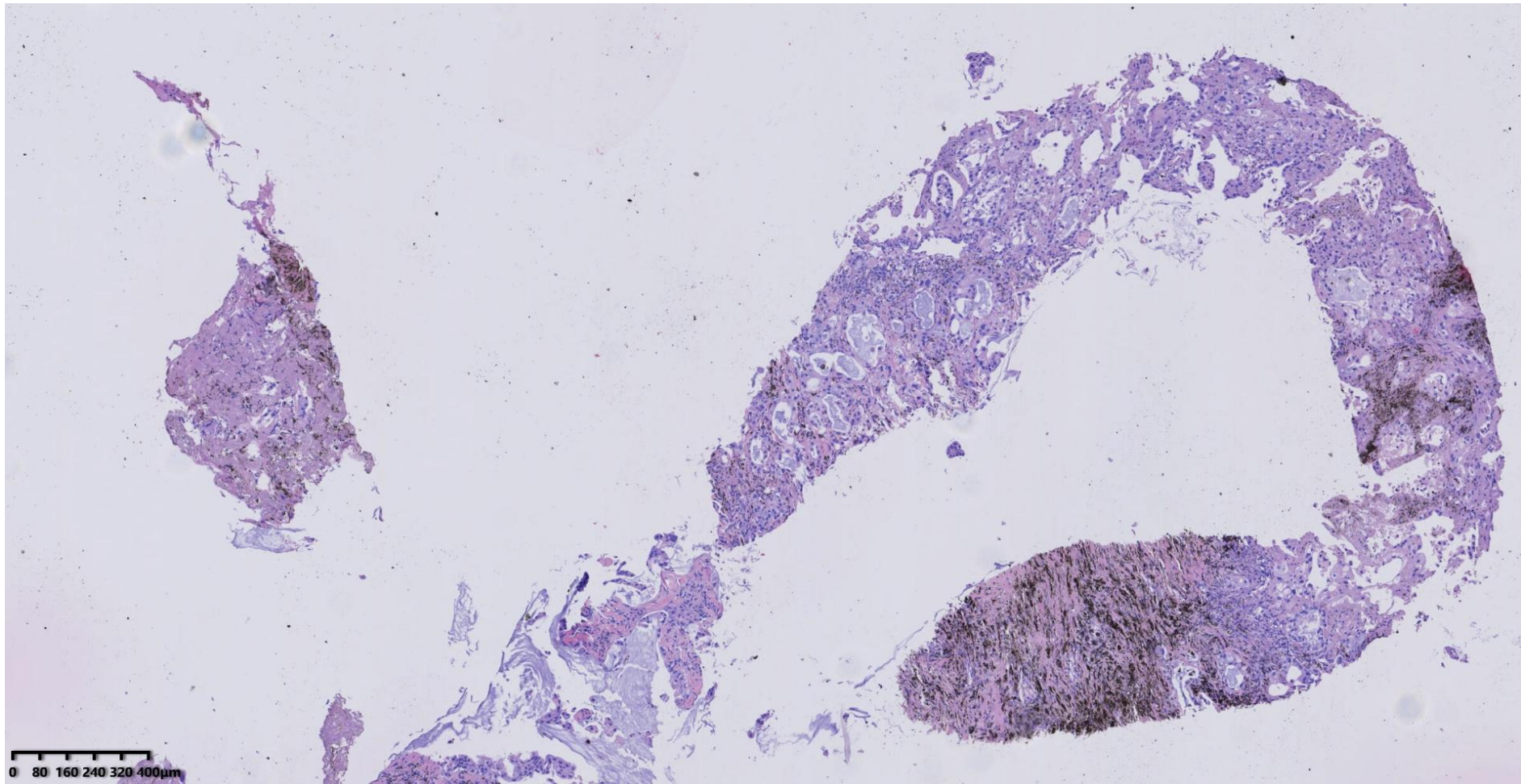
并将免疫组化结果作详细标注



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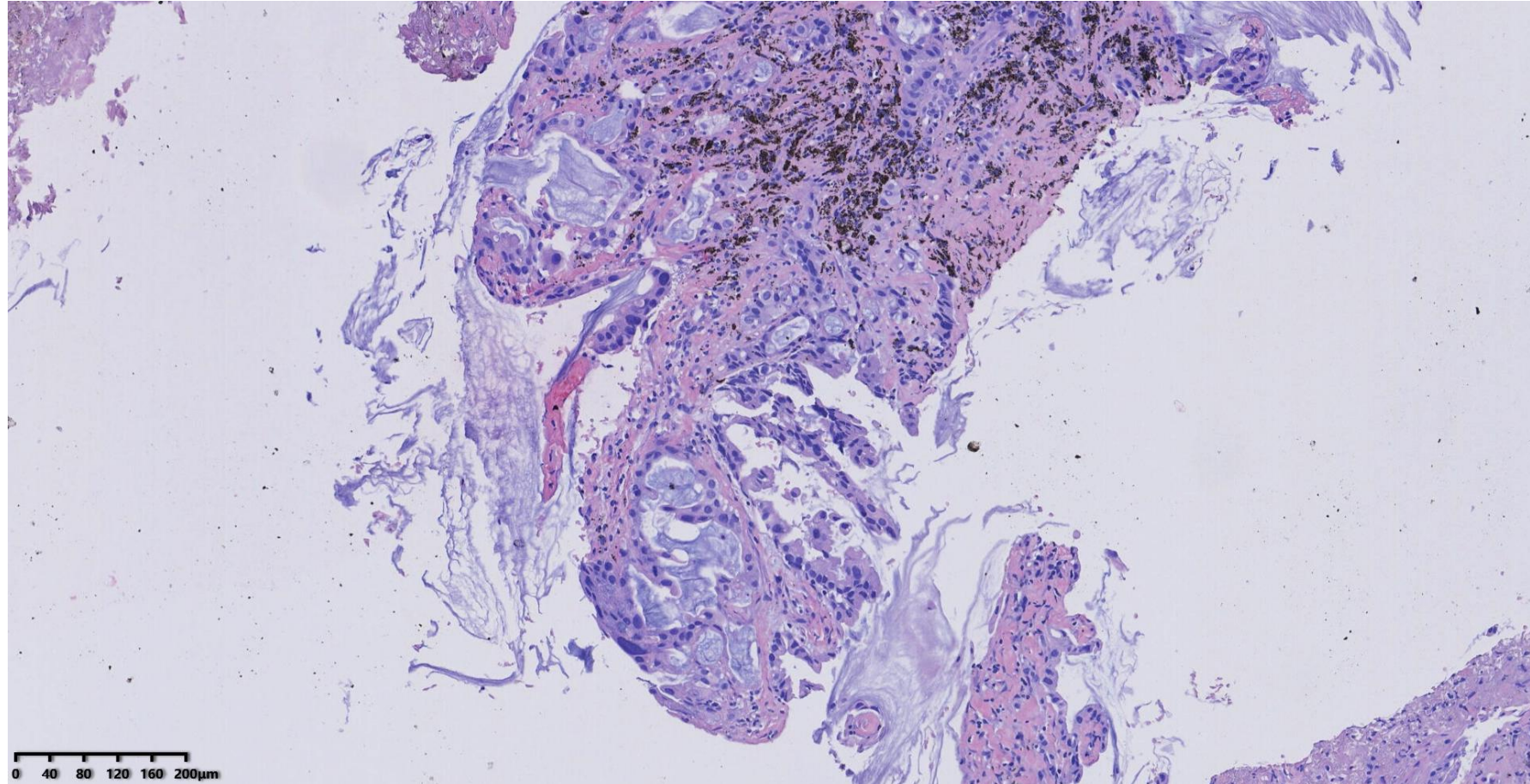
免疫组化的作用与意义-判断肿瘤良恶性及组织学分型-病例6

- 肺穿刺病例：患者女性，79岁，右肺上叶穿刺标本



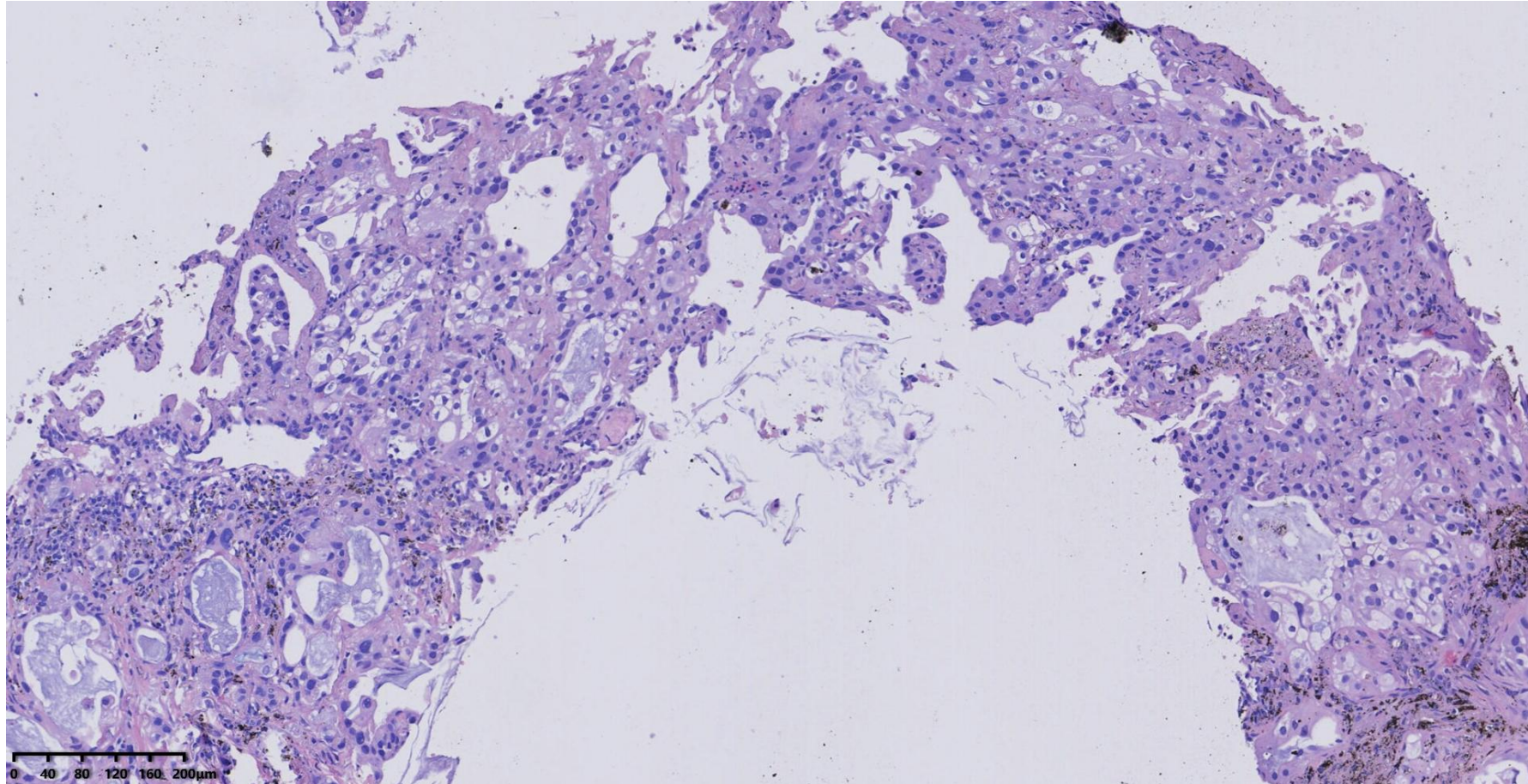


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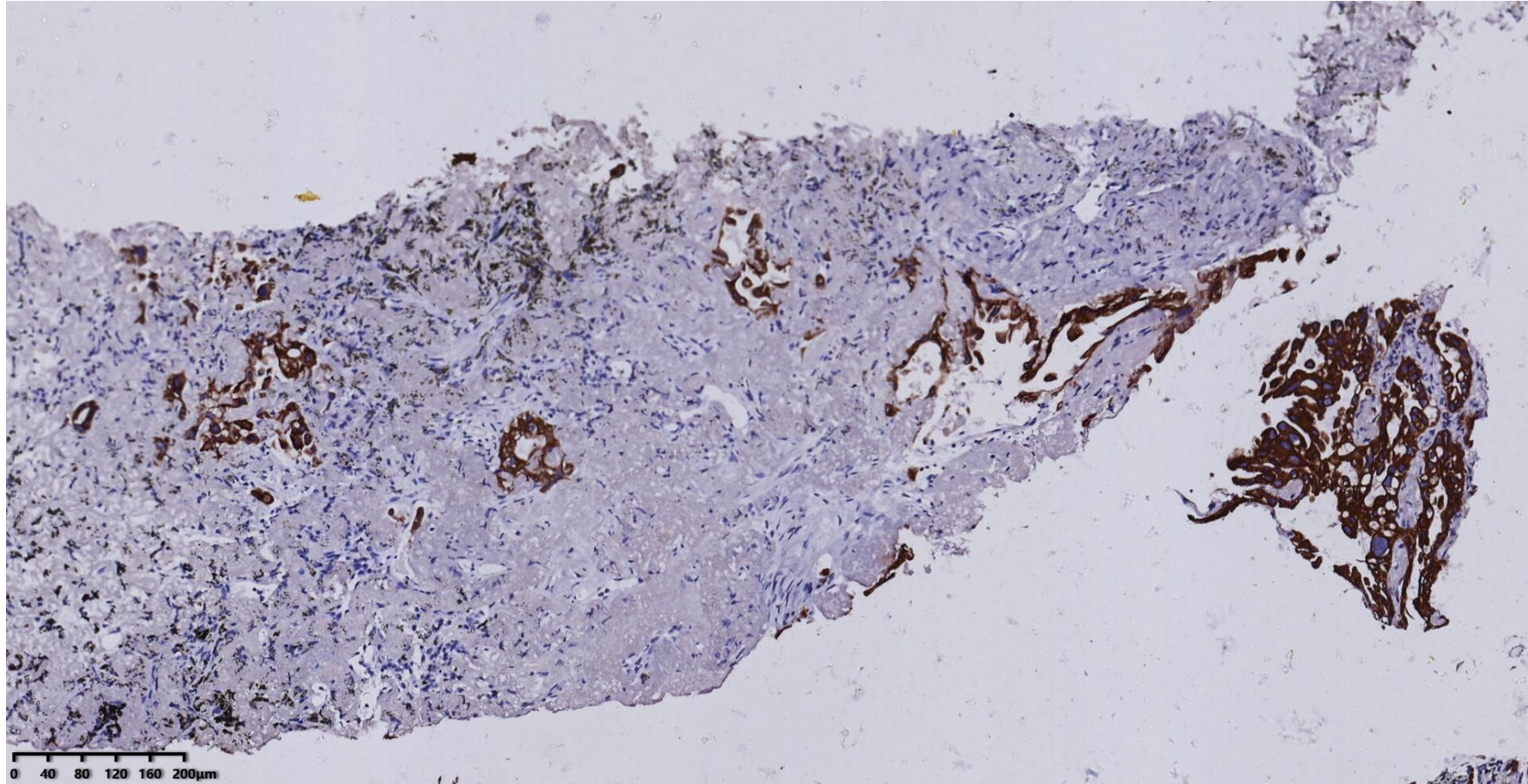
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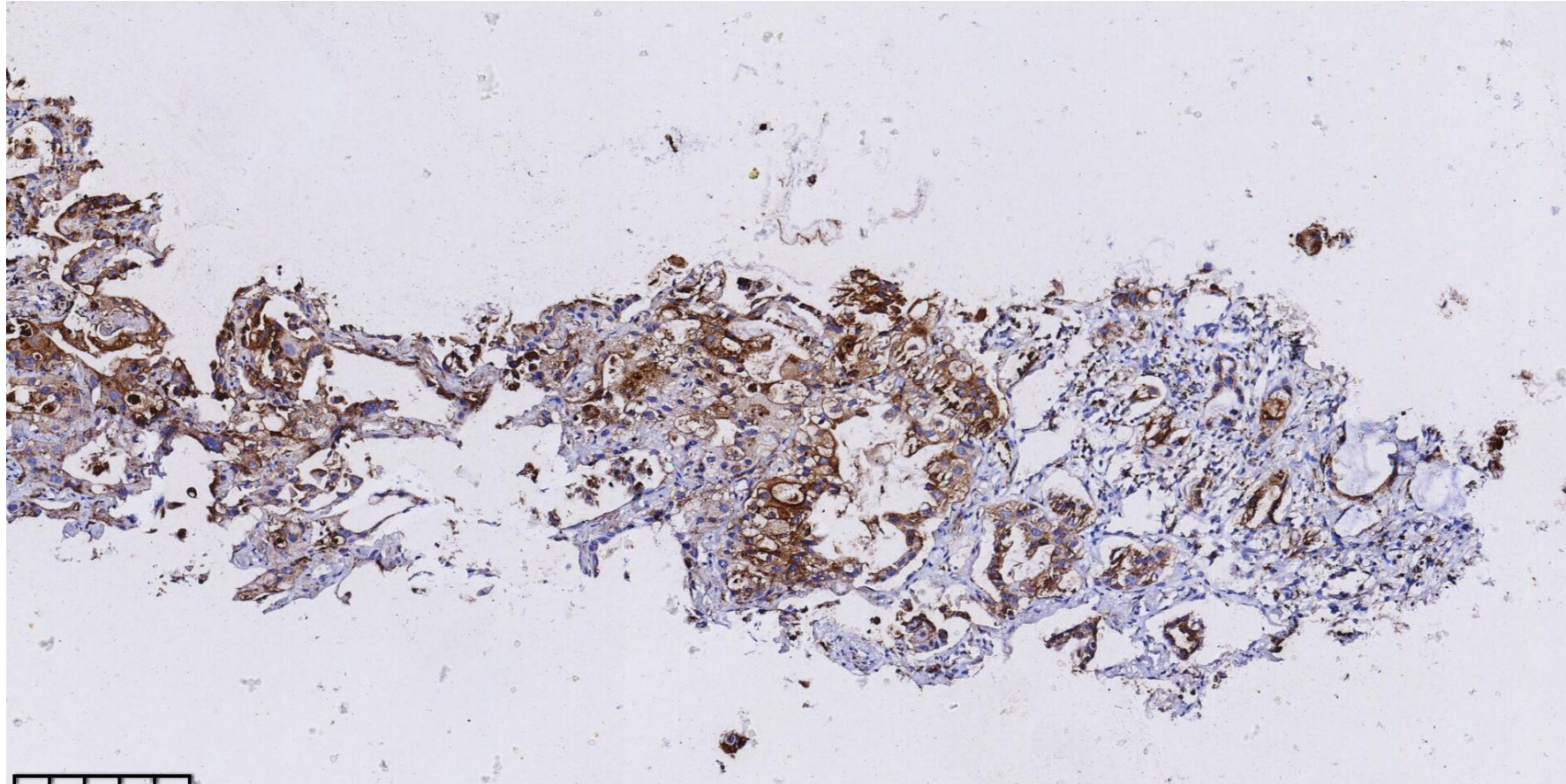
CK7





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Napsin-A

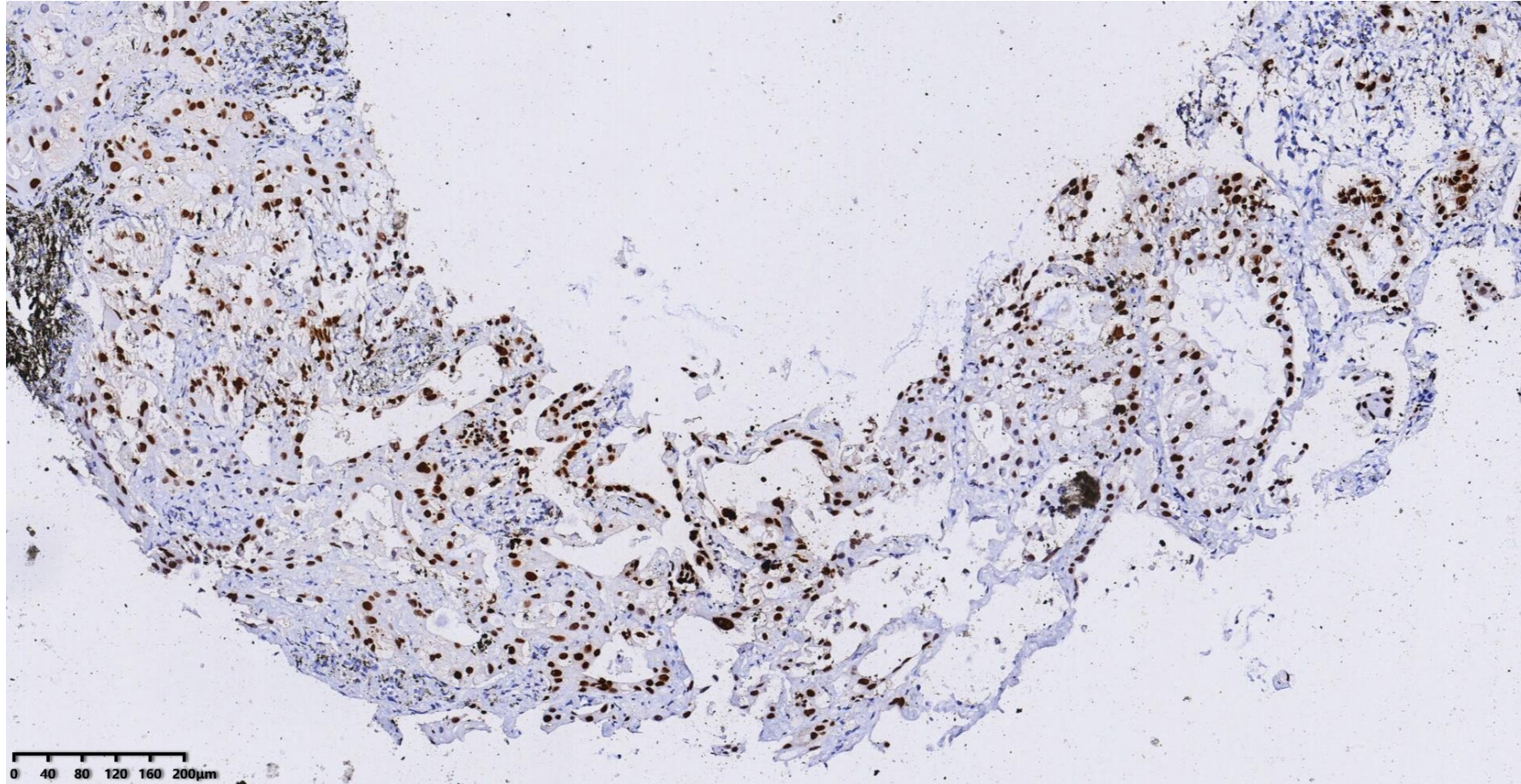


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TTF-1





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病理诊断：

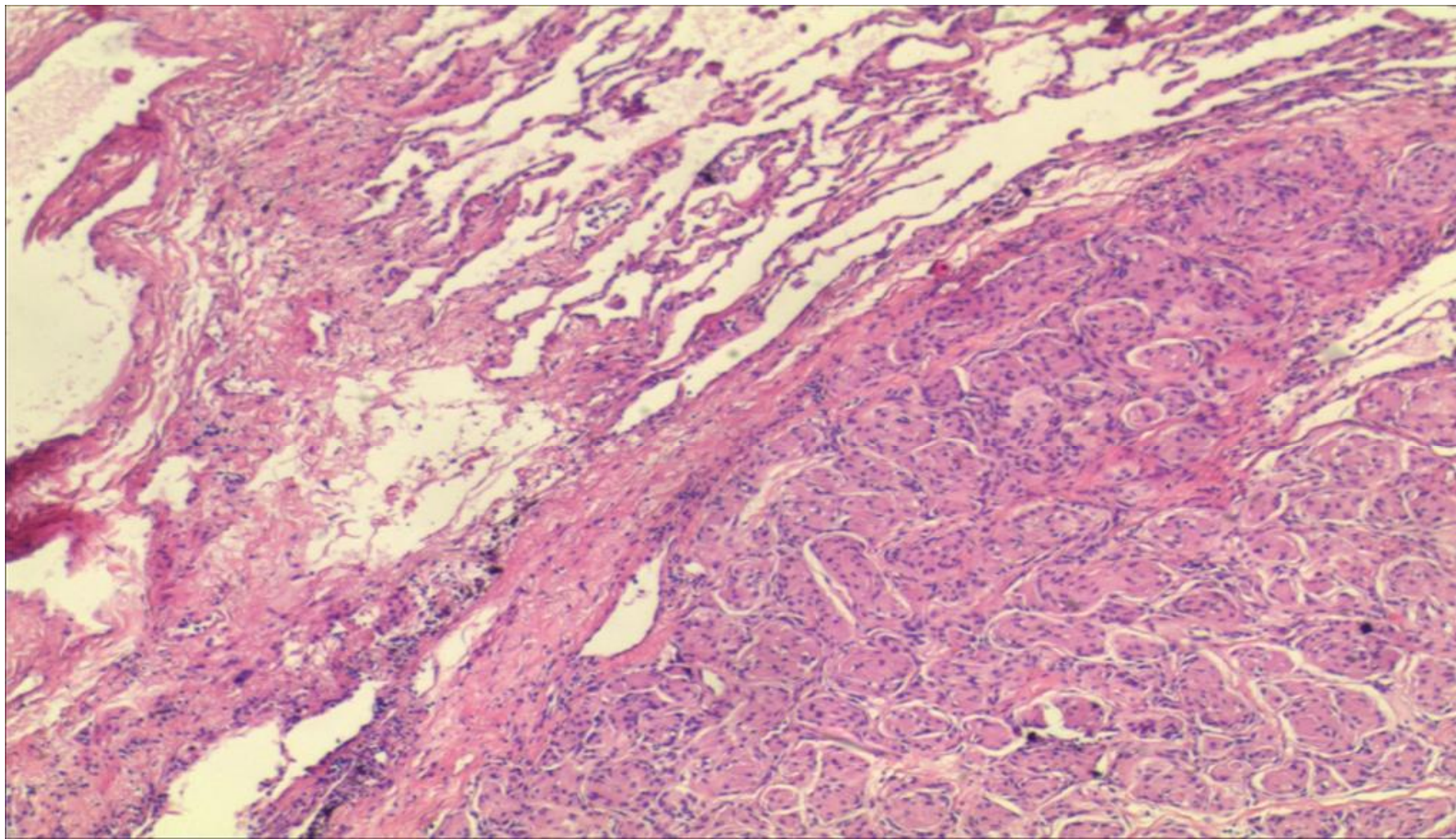
（右肺上叶穿刺活检）浸润性肺腺癌，活检小组织中仅见腺泡型。

并将免疫组化结果作详细标注



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免疫组化的作用与意义-判断肿瘤组织学分型-病例7

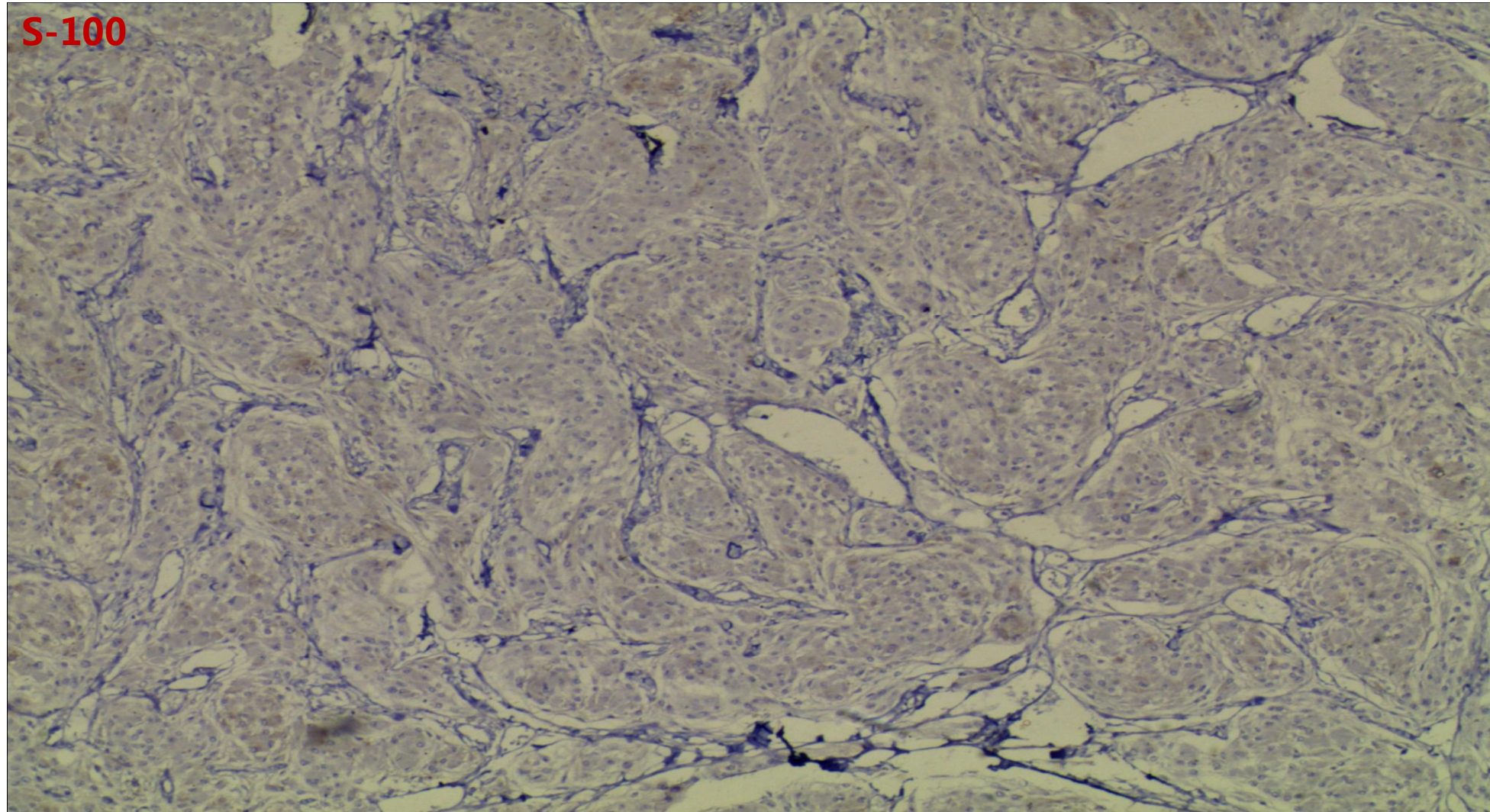


肺部包块



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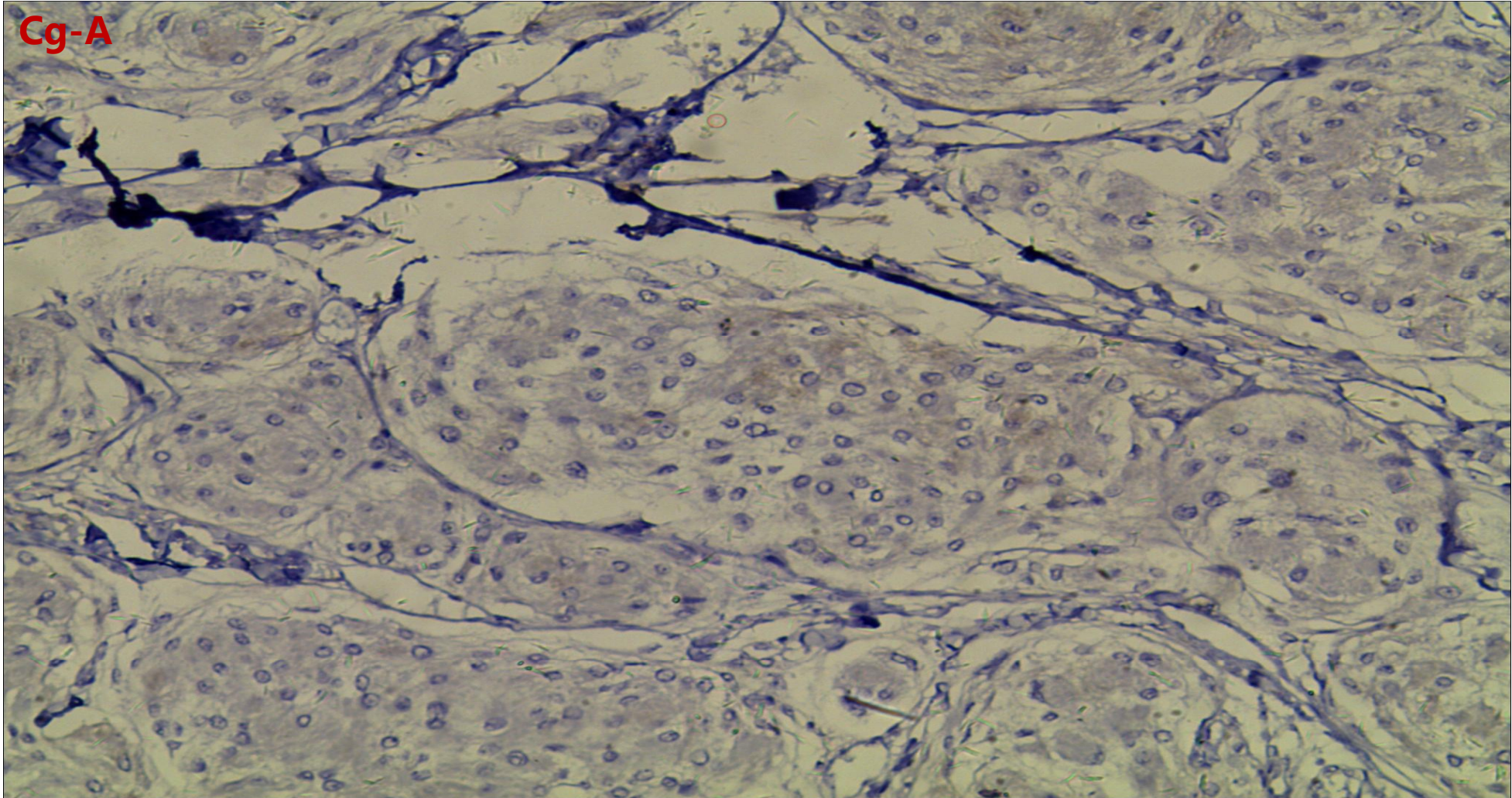
S-100





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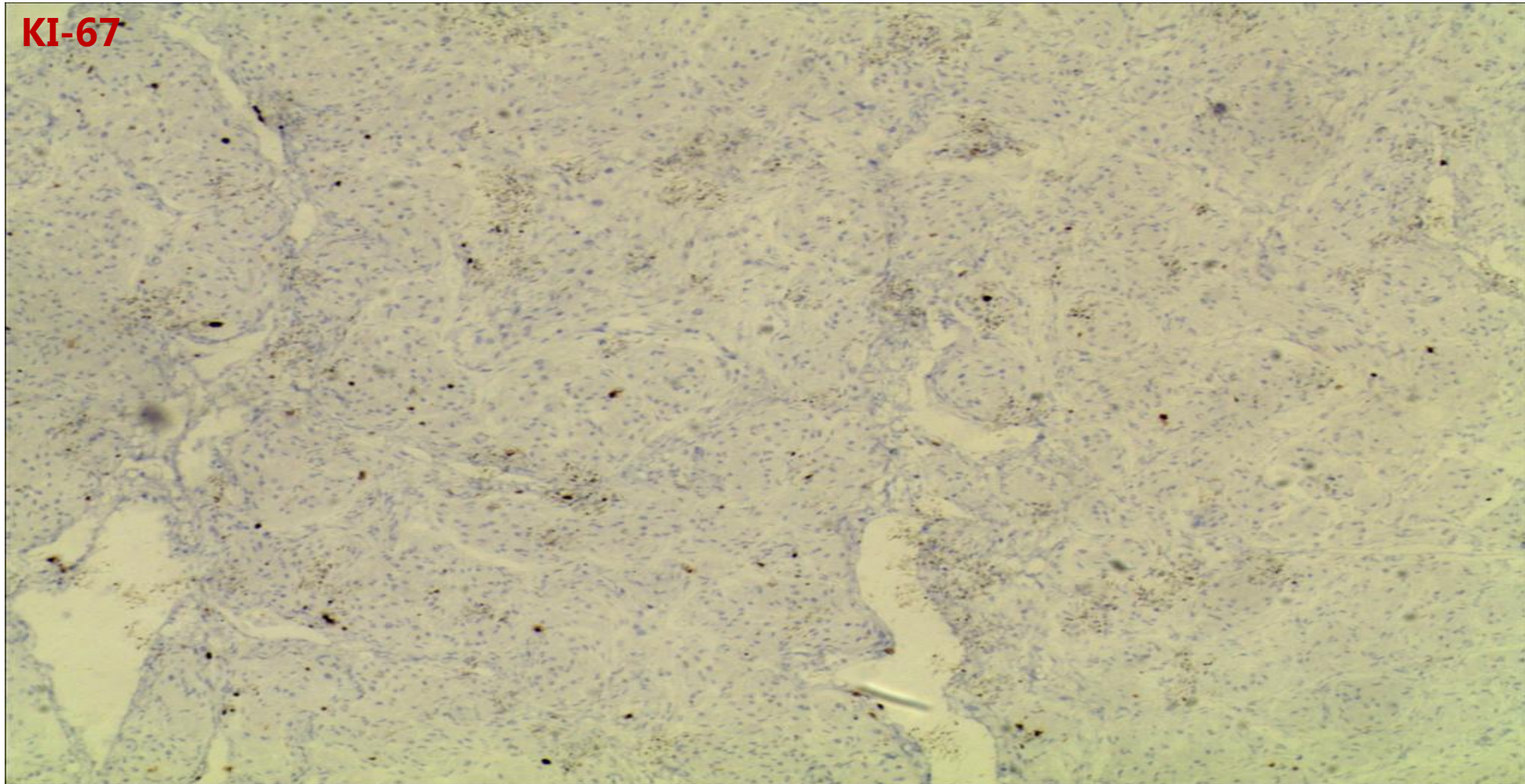
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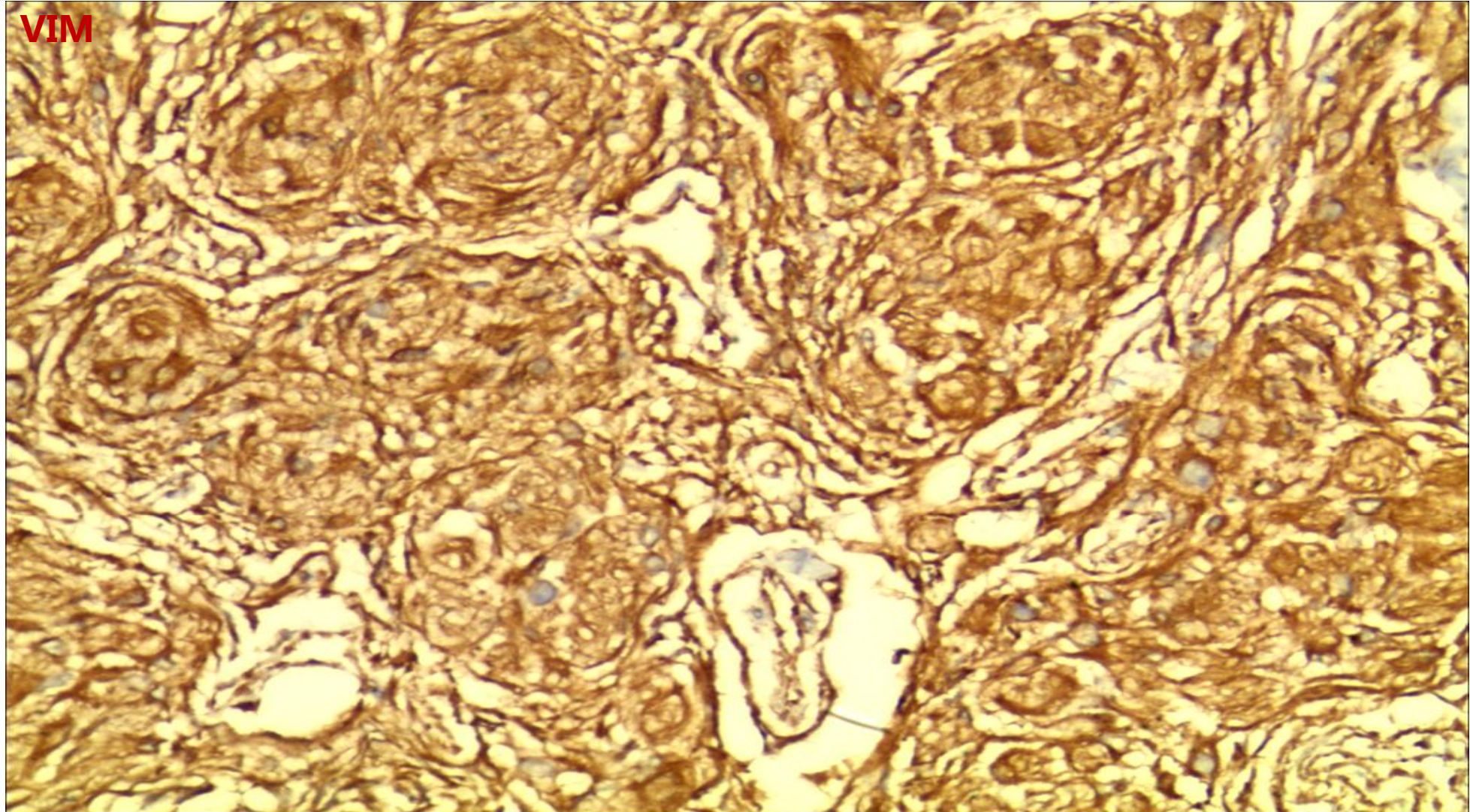
Ki-67





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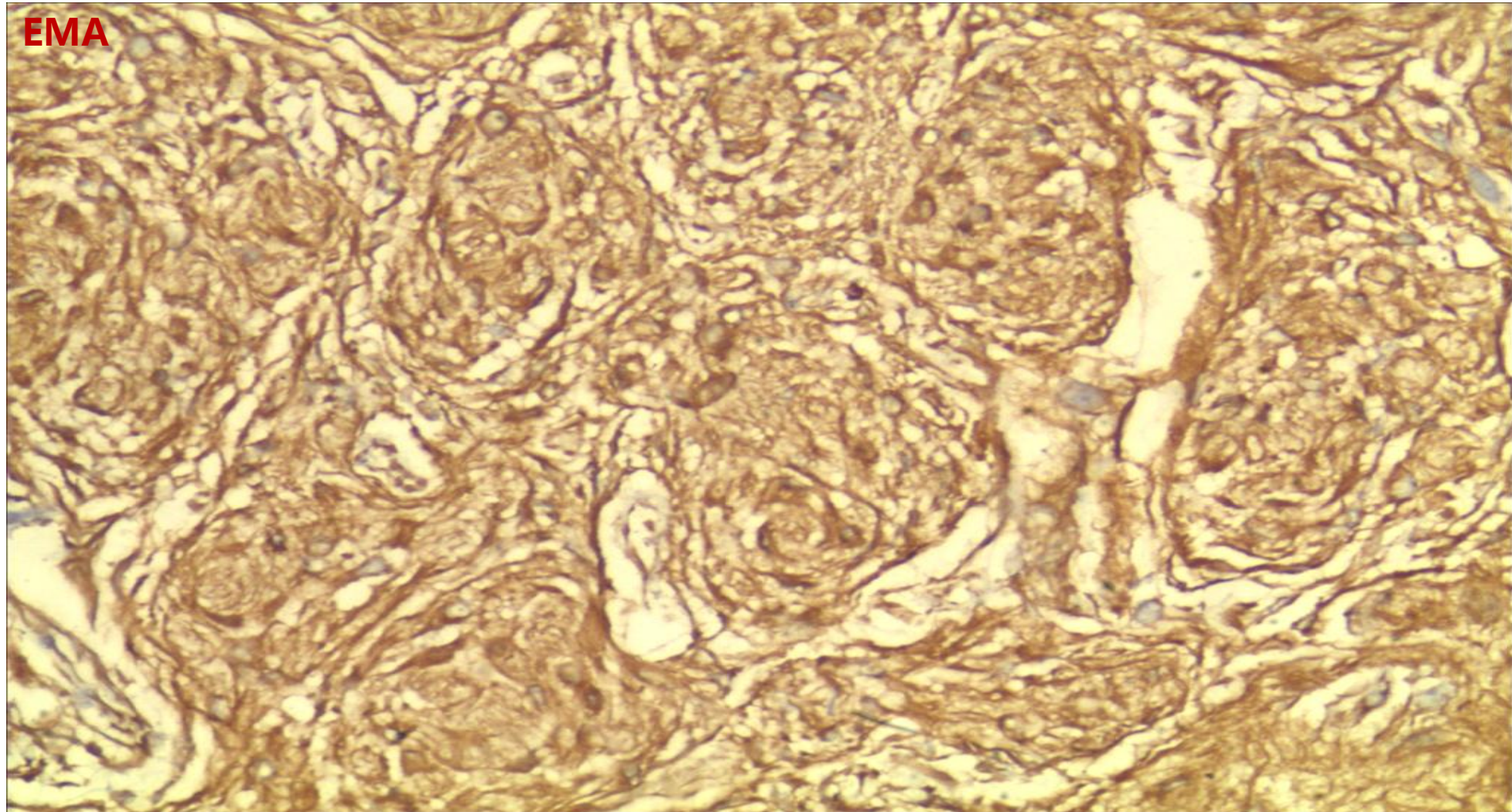
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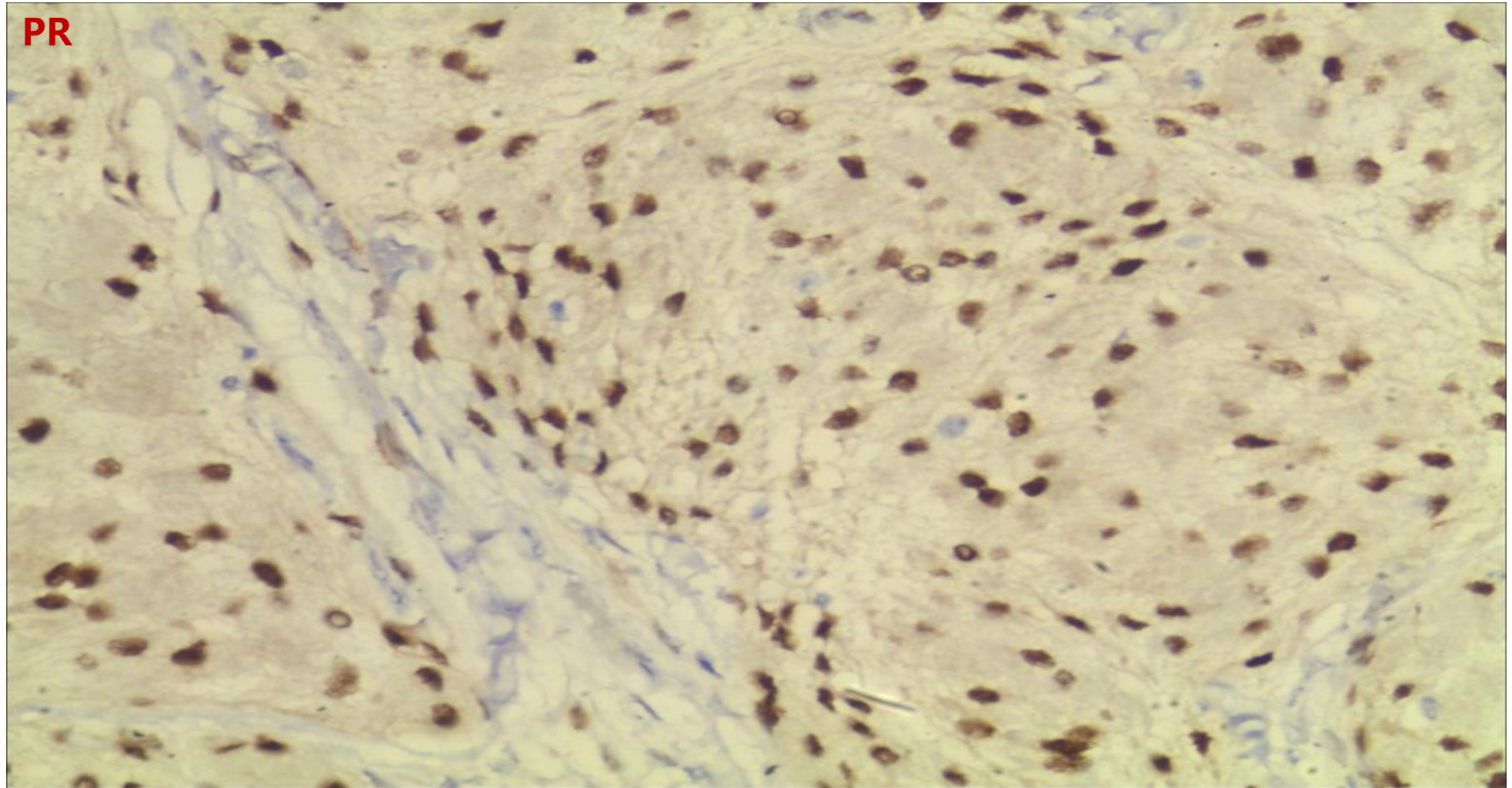
EMA





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病理诊断

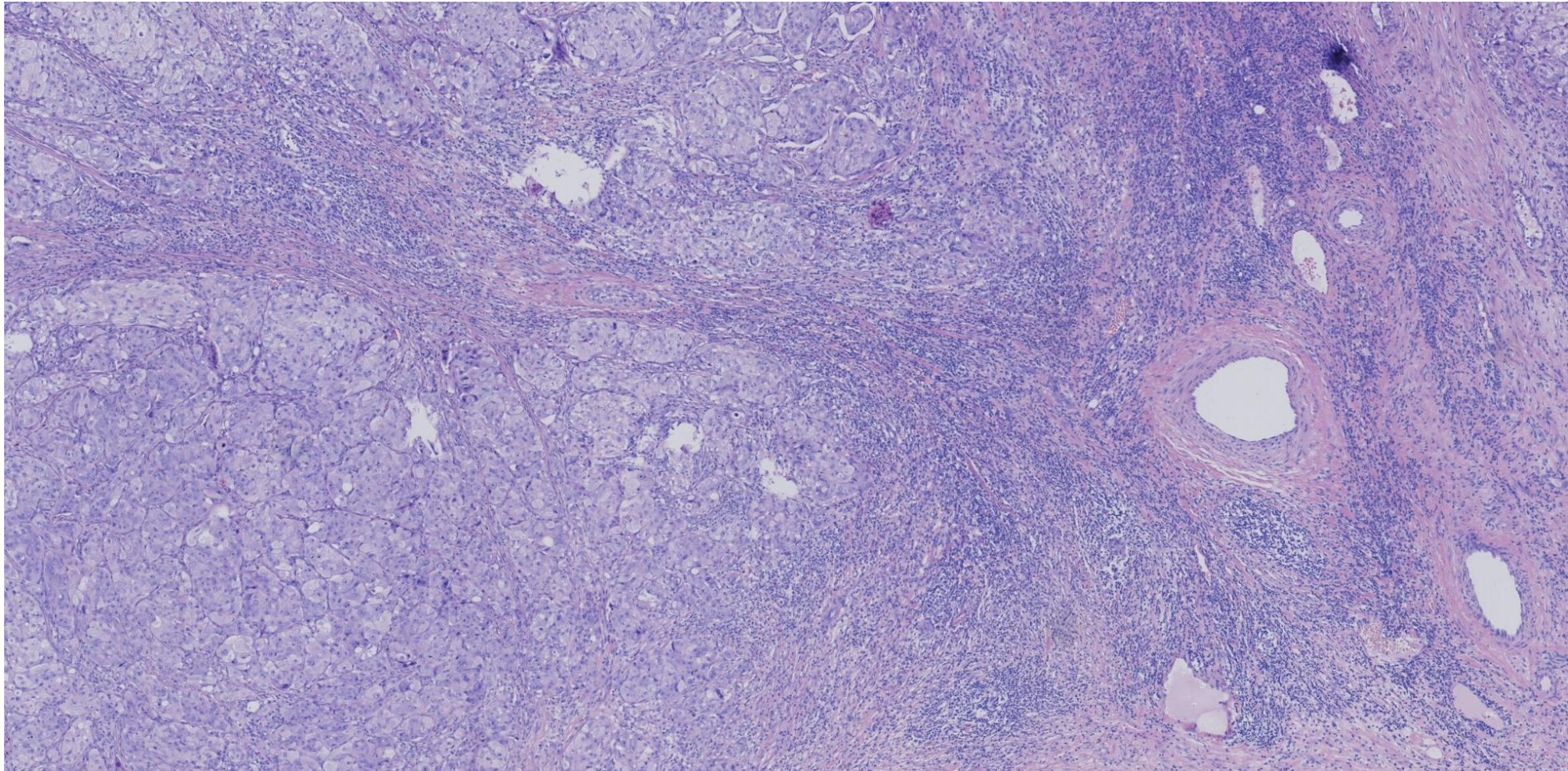
- **(右肺上叶)免疫组化结果支持脑膜瘤，建议临床完善中枢神经系统检查，在能排除转移的基础上，考虑肺原发脑膜瘤 (WHO I级)。**



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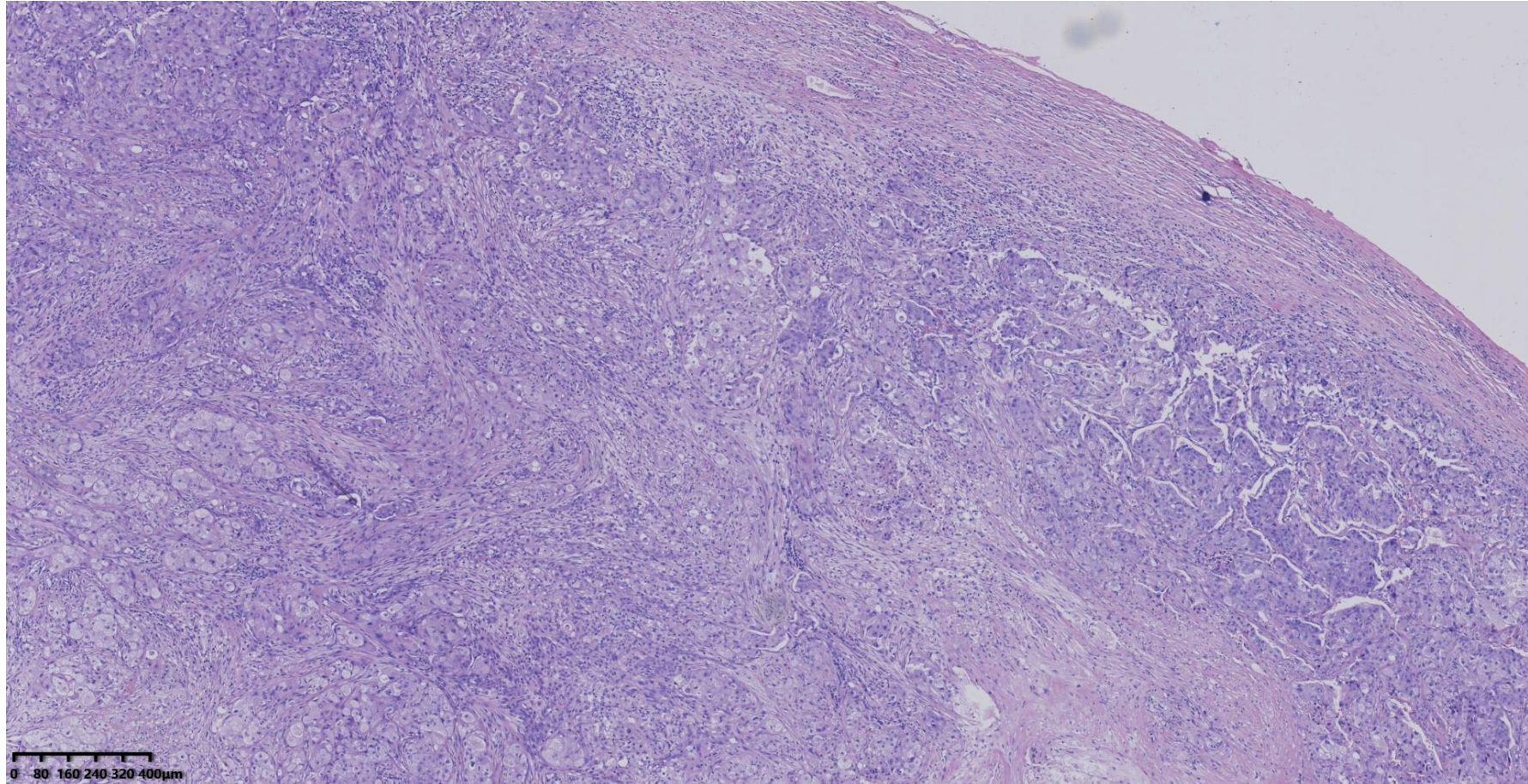
免疫组化的作用与意义-确定转移性恶性肿瘤的原发部位-病例8

- 淋巴结病例：患者男性，67岁，左锁骨上肿物标本



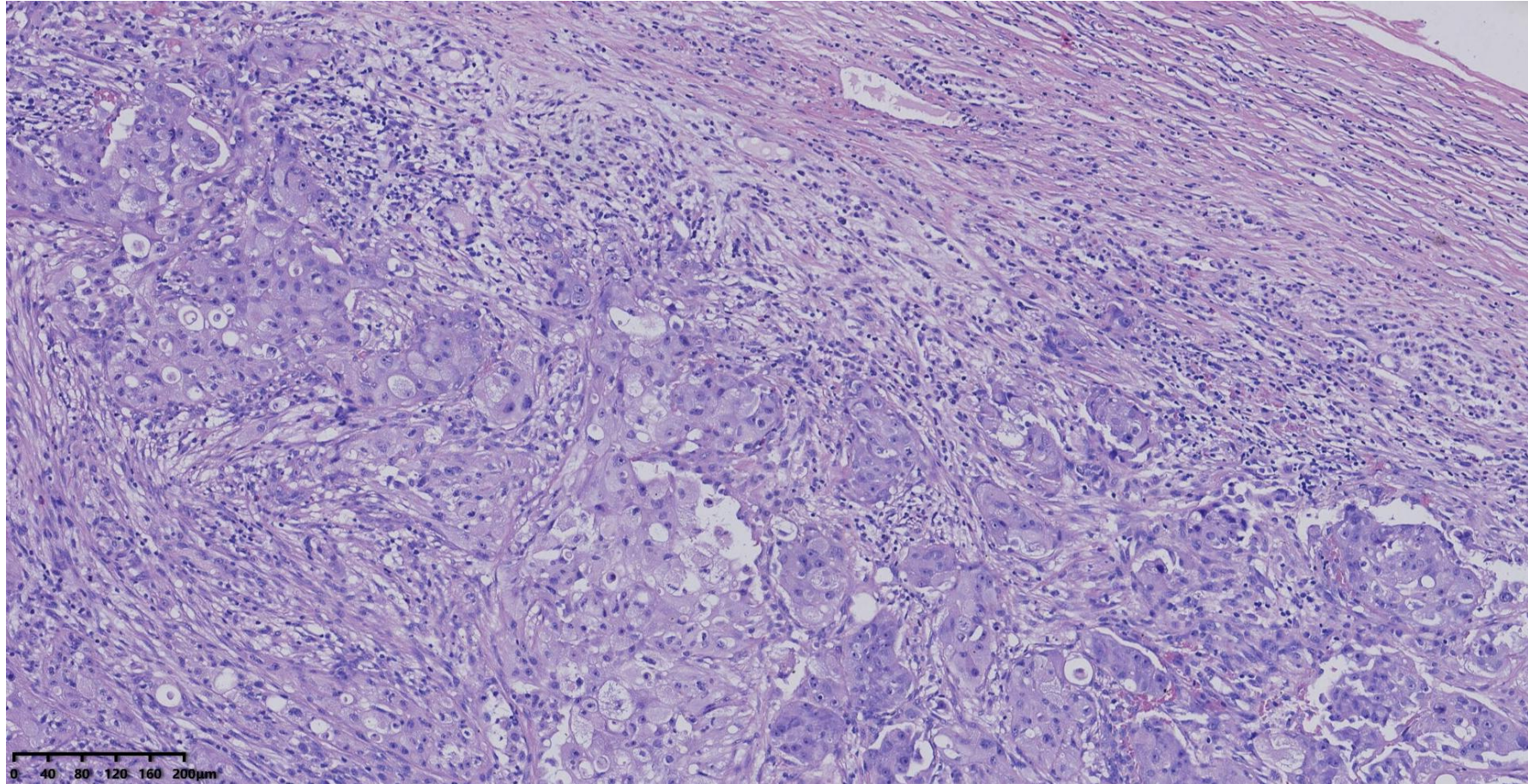


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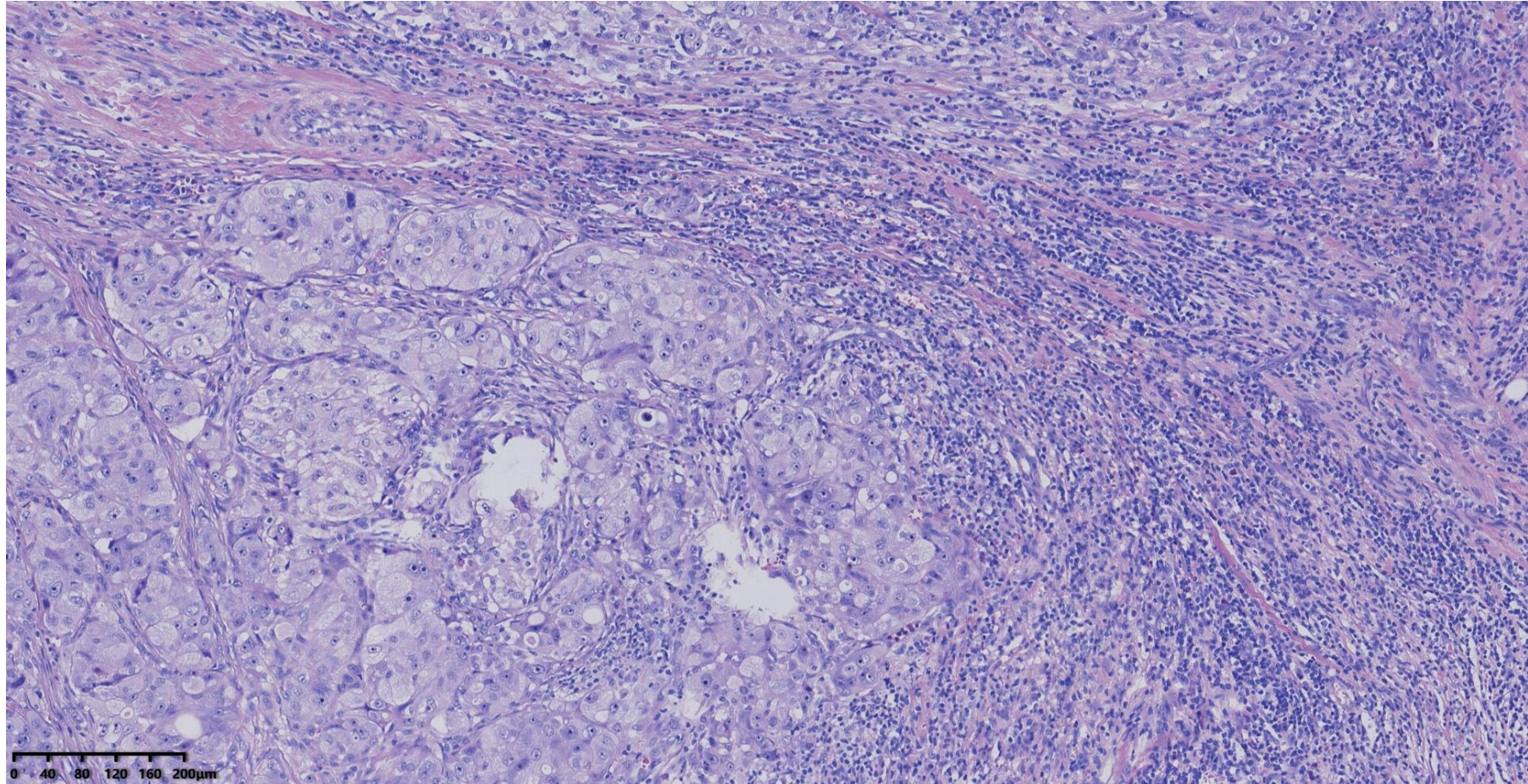


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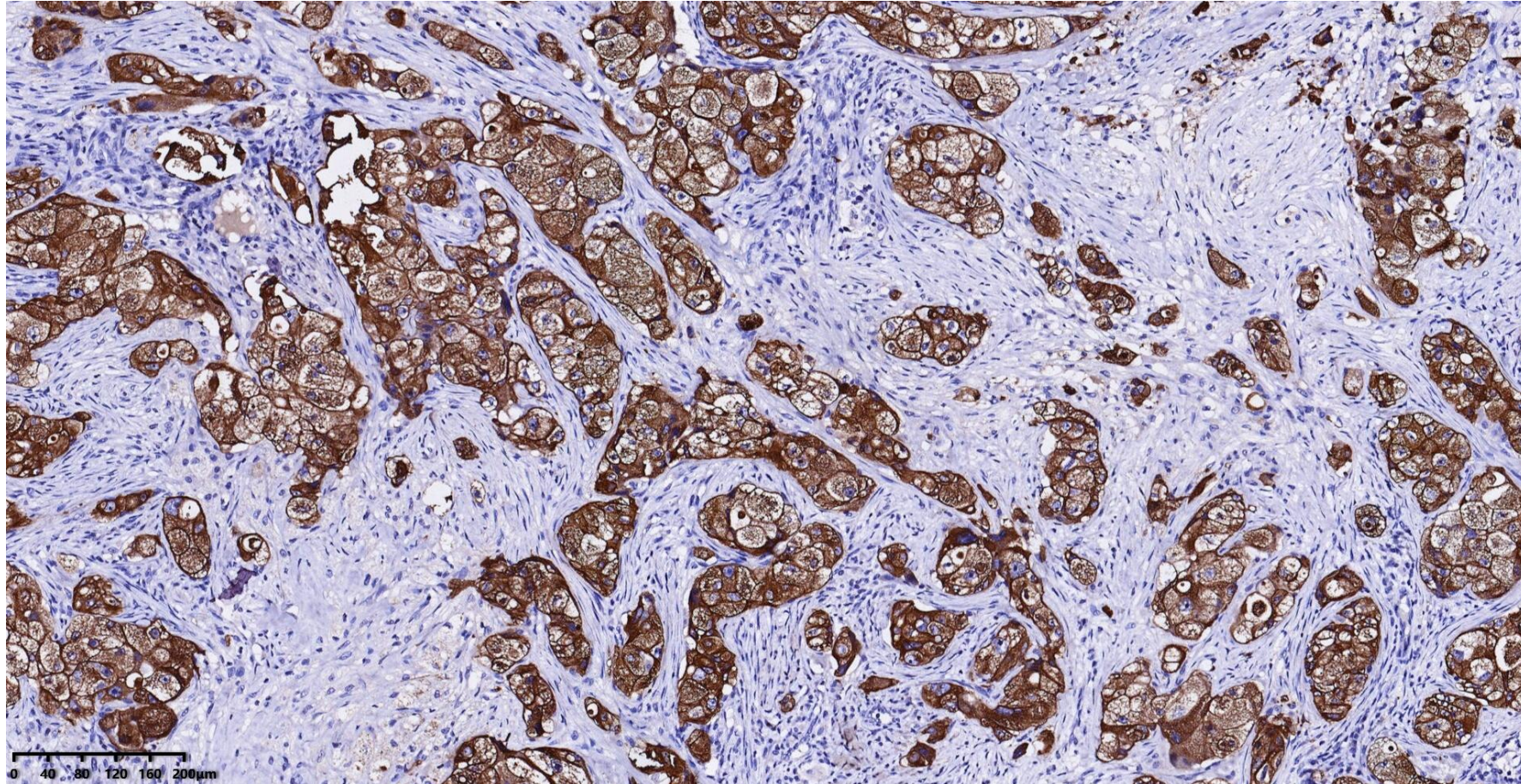
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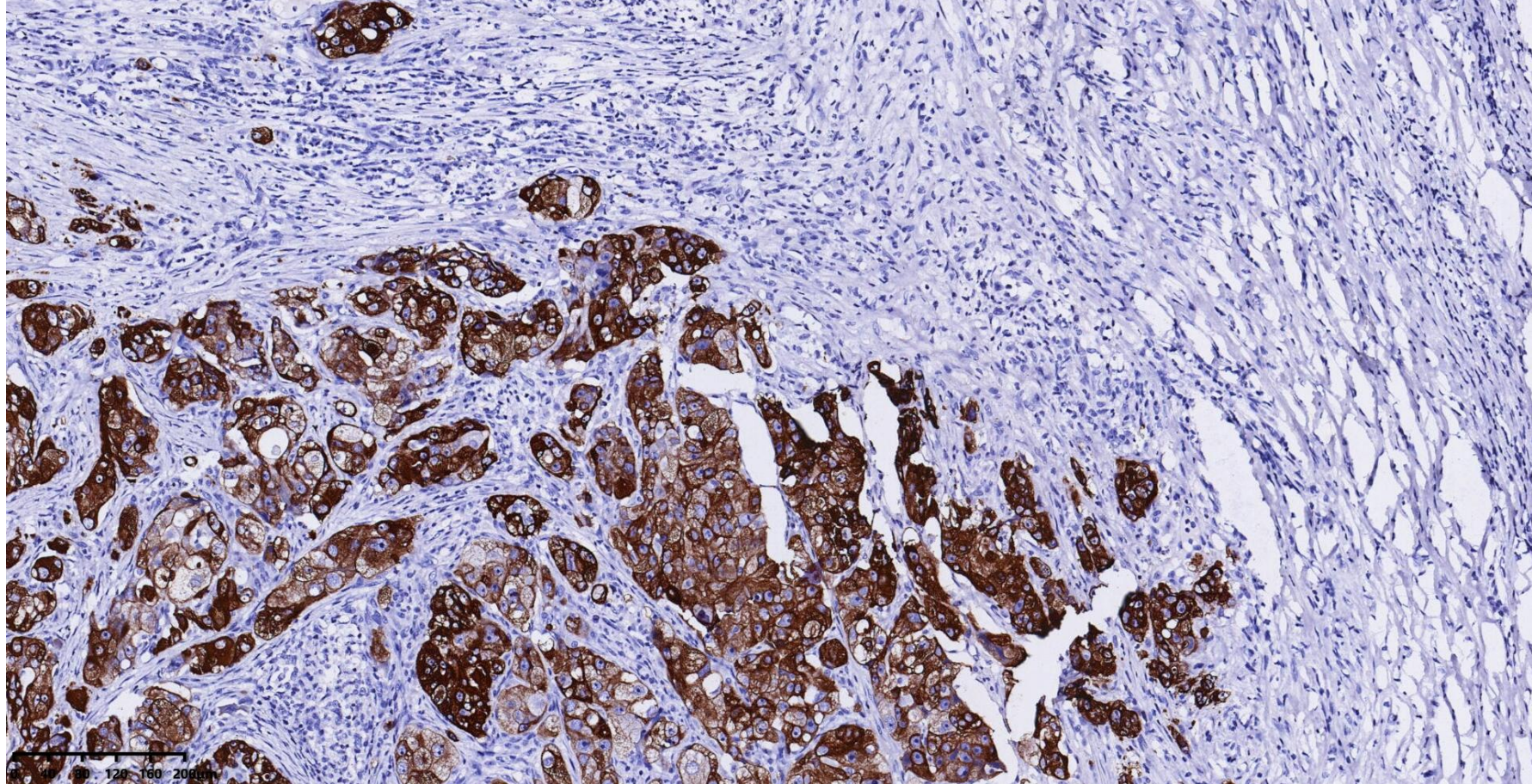
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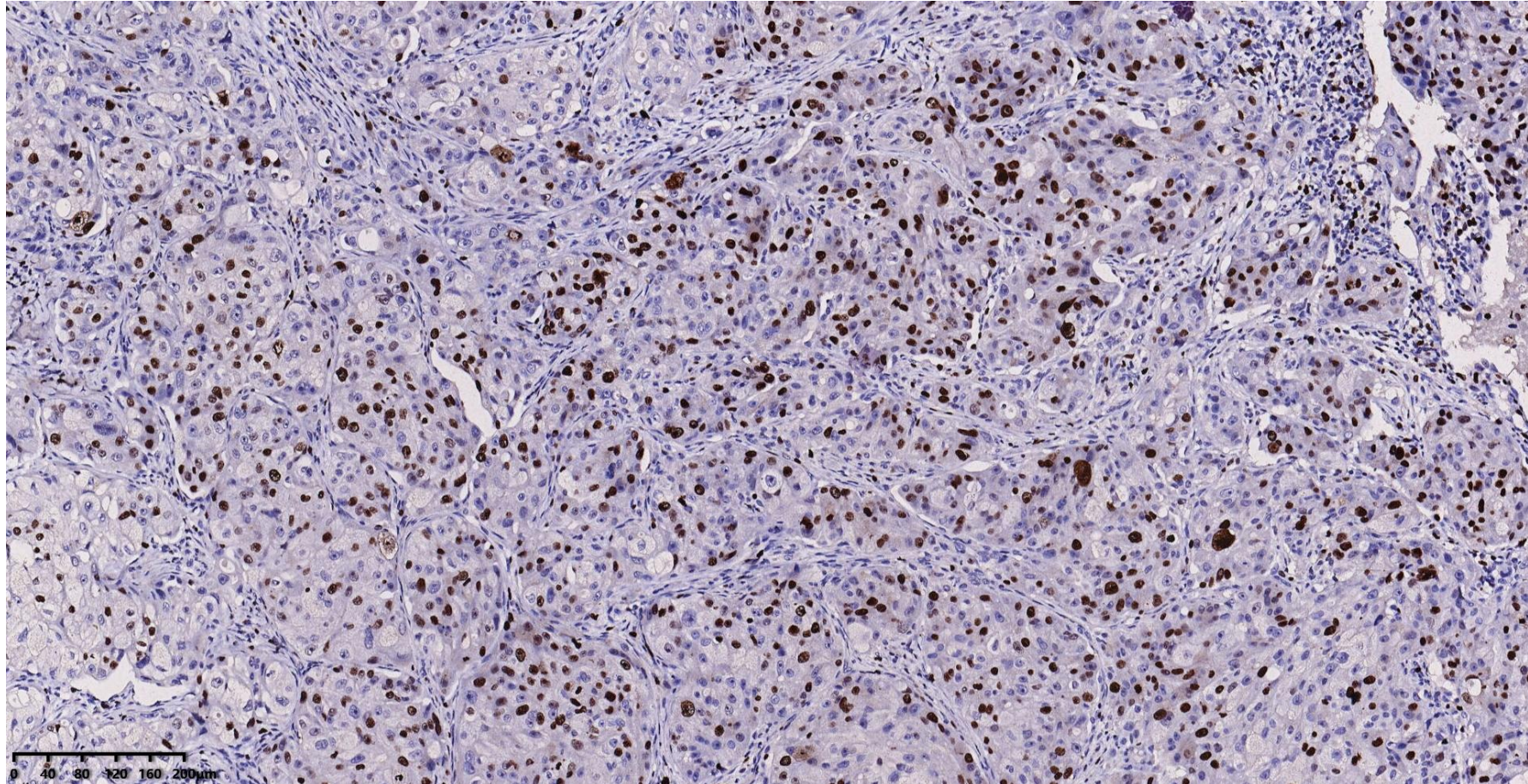
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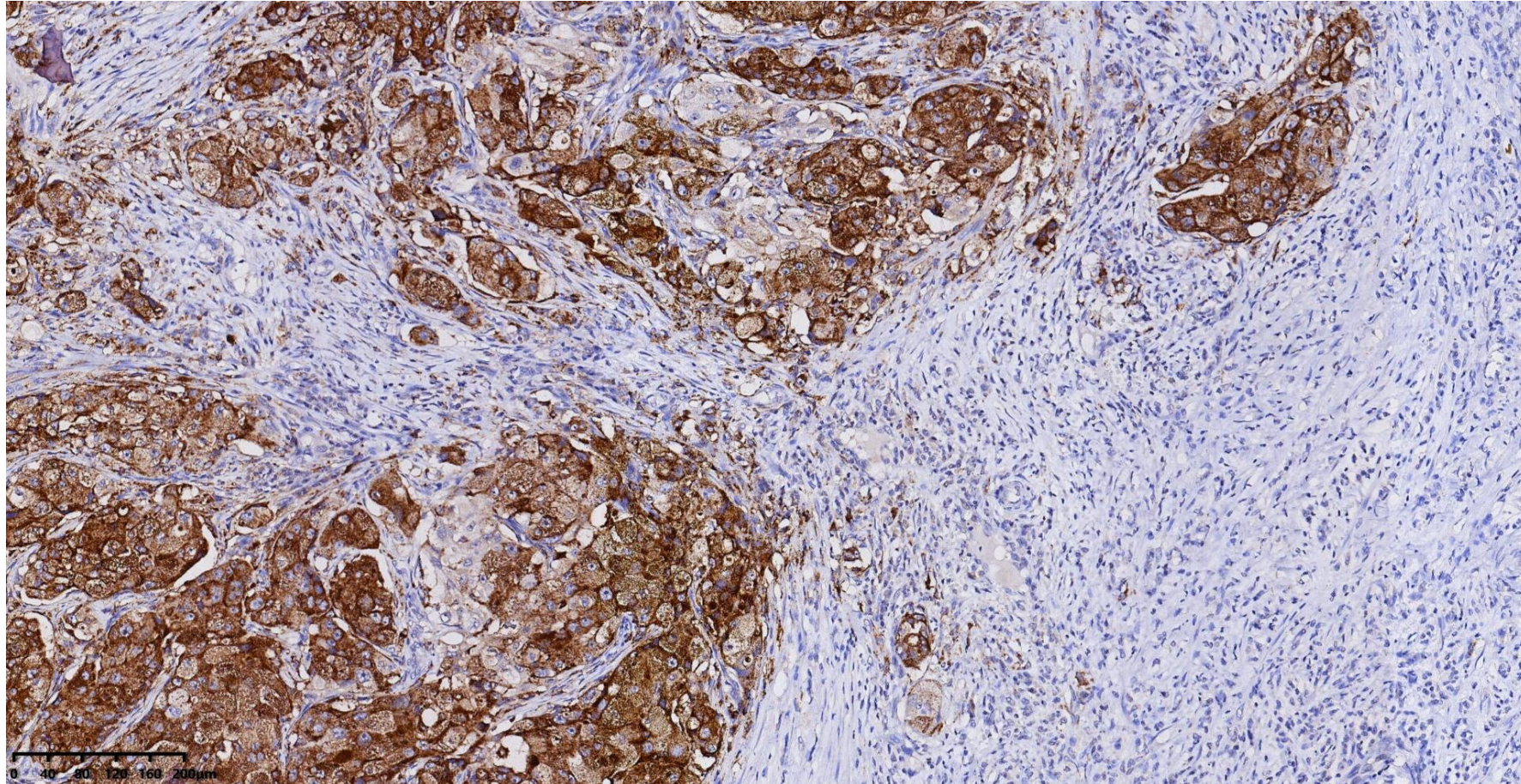
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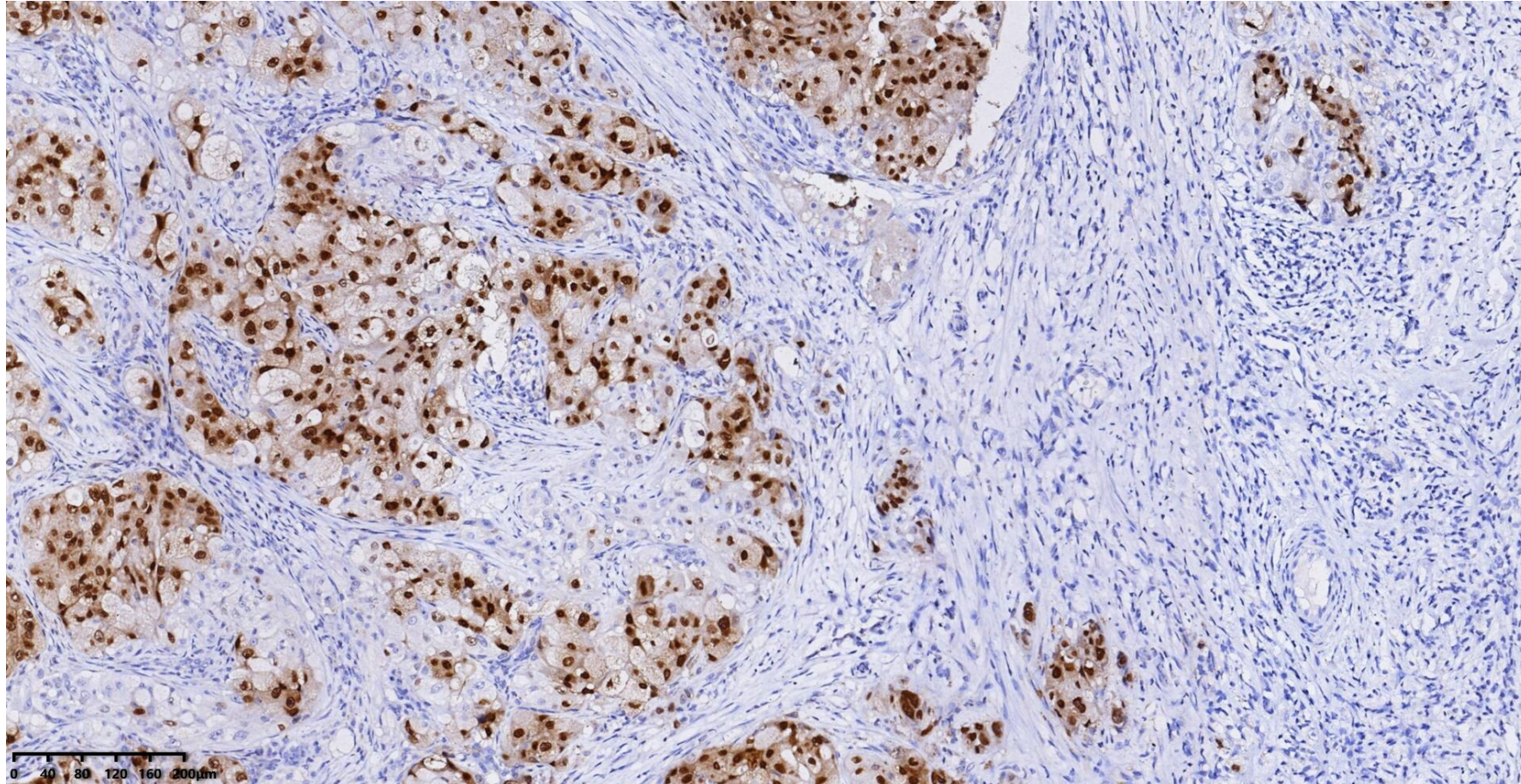
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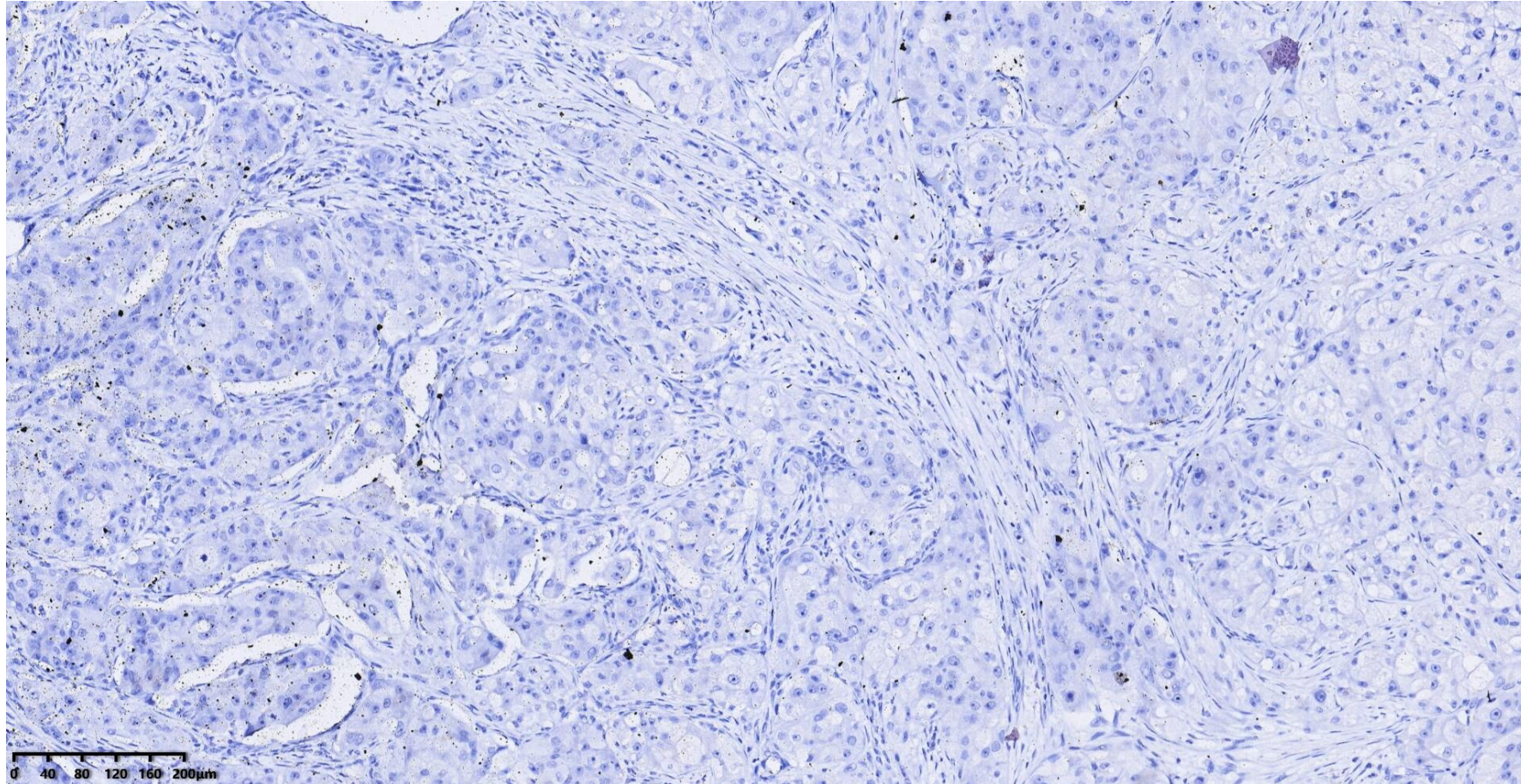
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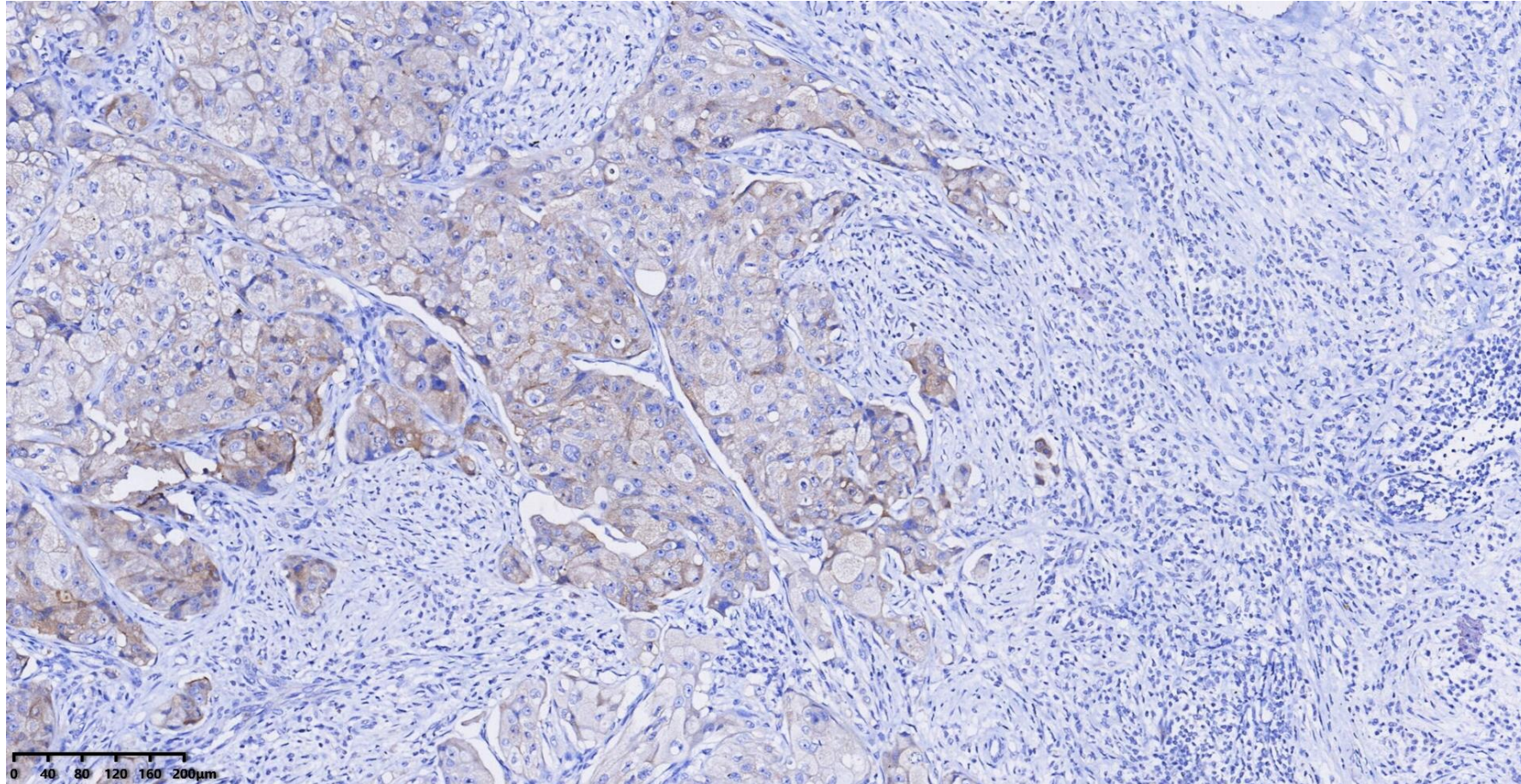
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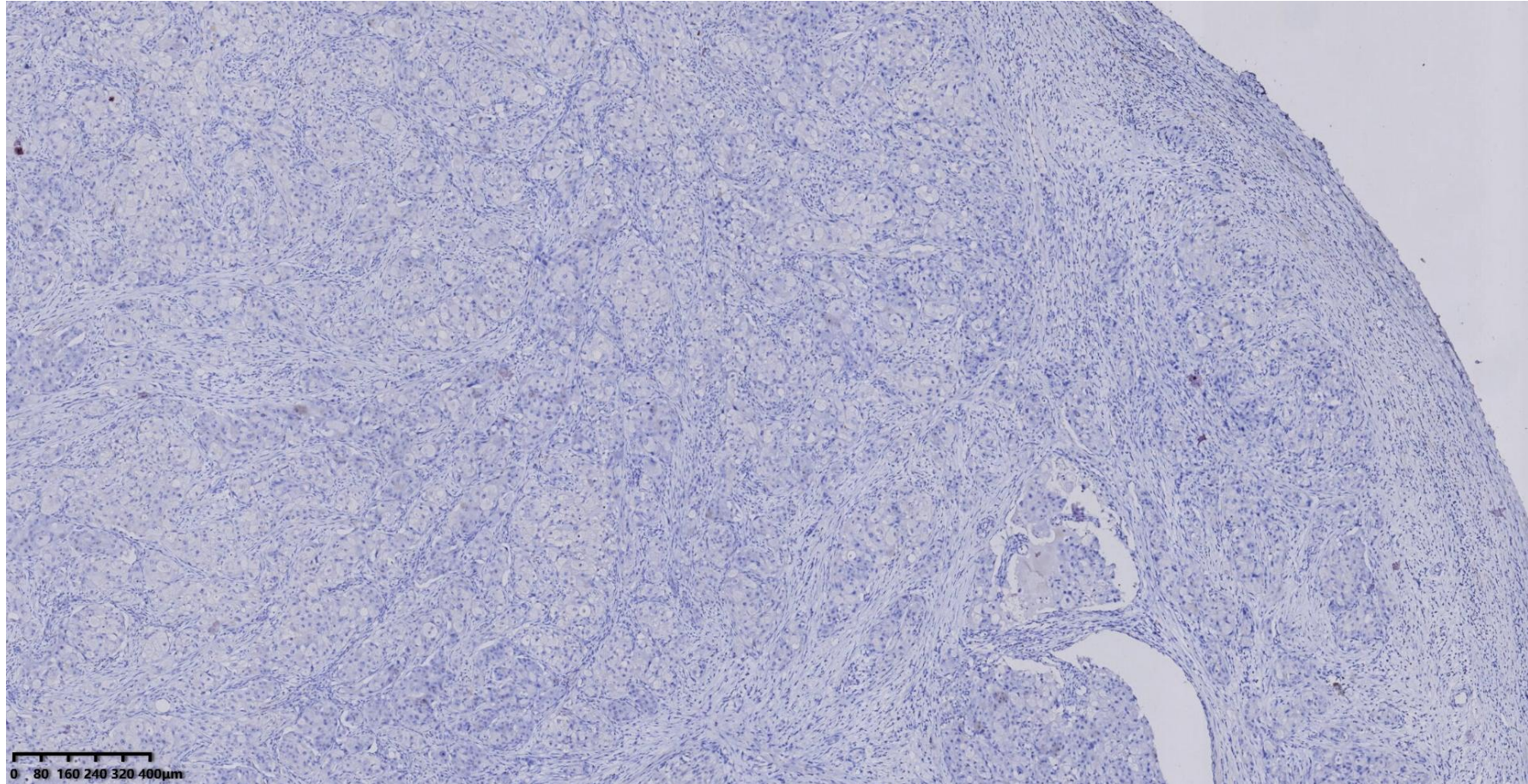
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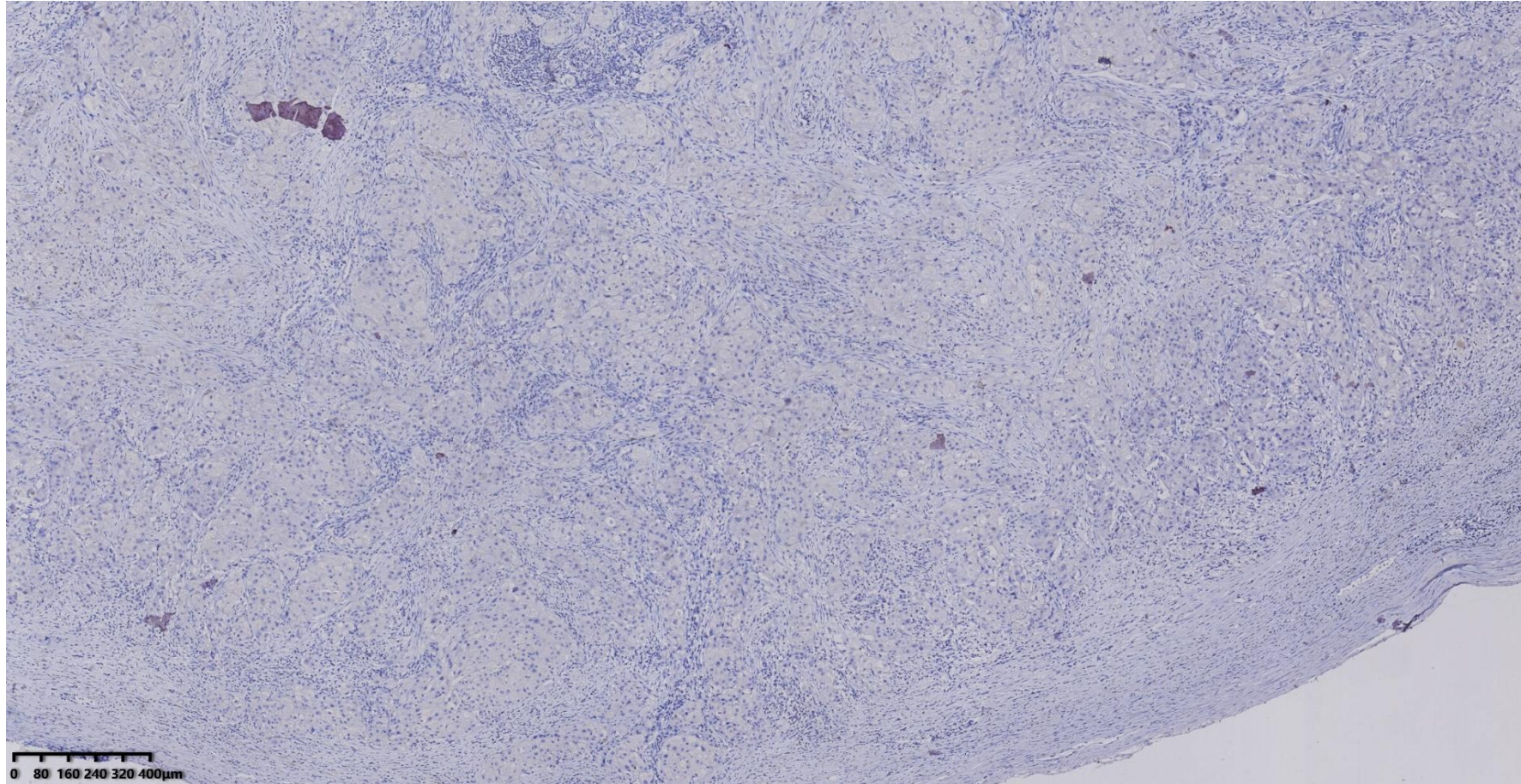
Syn





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病理诊断：

(左锁骨上肿物) 恶性肿瘤淋巴结转移 (1/1), 免疫组化标记支持

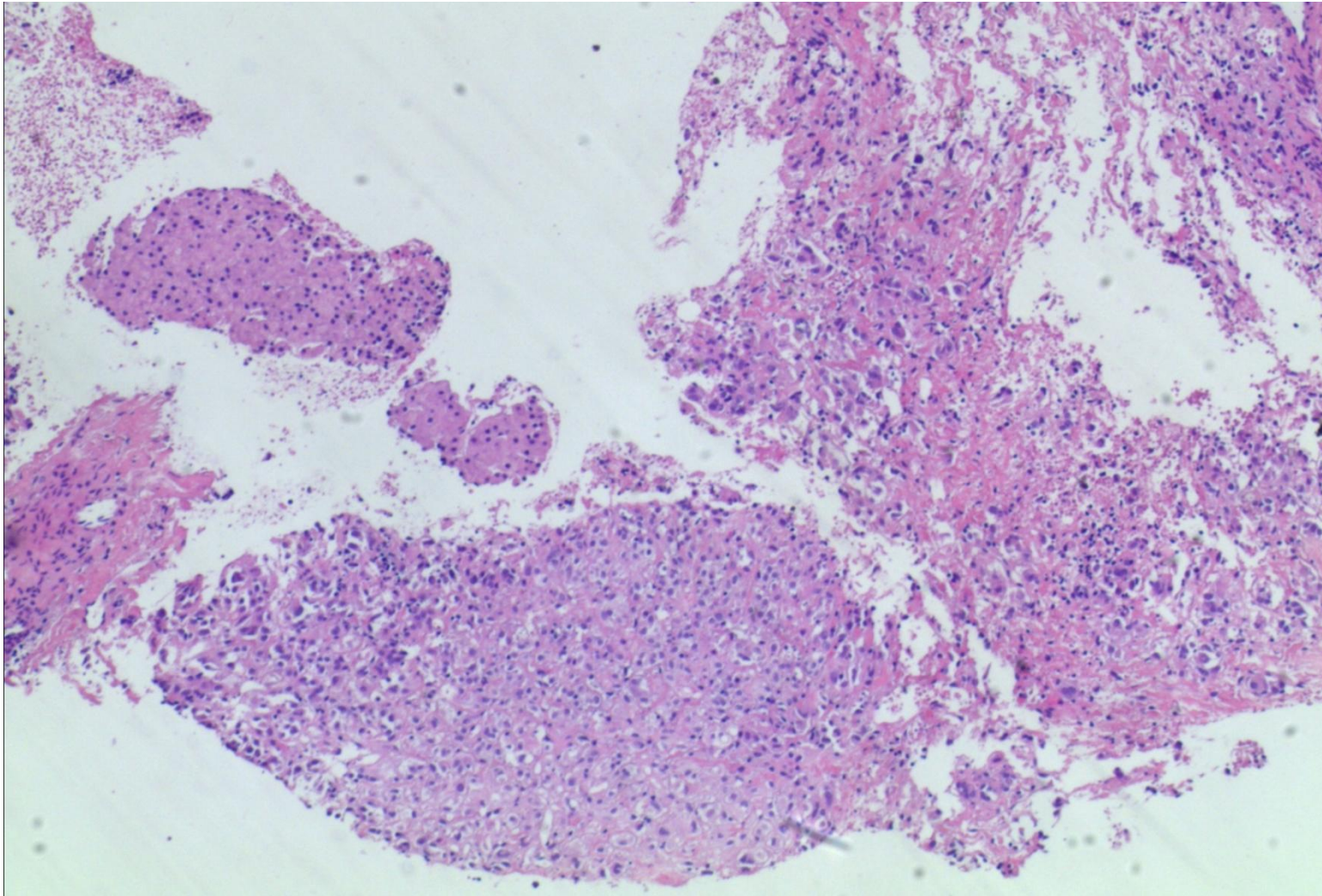
肺腺癌淋巴结转移, 建议临床完善肺部检查查找原发灶。

并将免疫组化结果作详细标注



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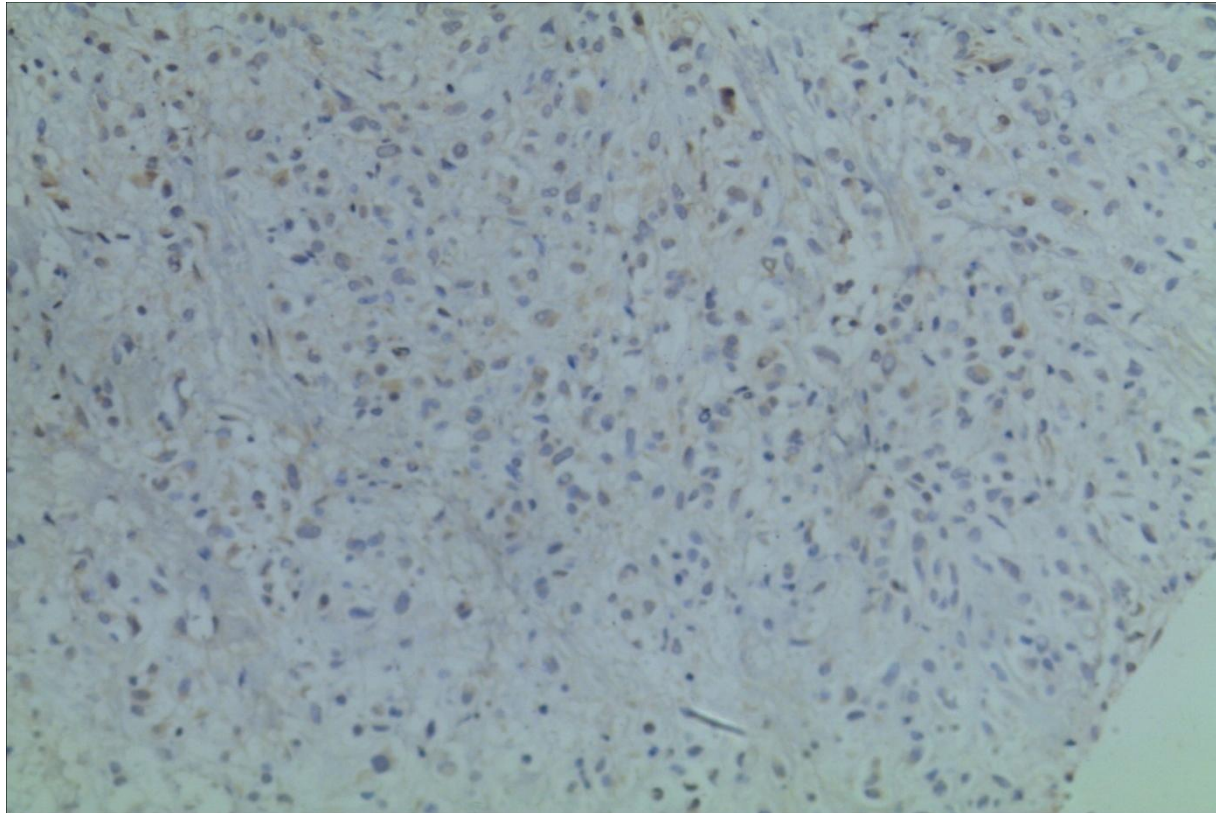
免疫组化的作用与意义-确定转移性恶性肿瘤的原发部位-病例9



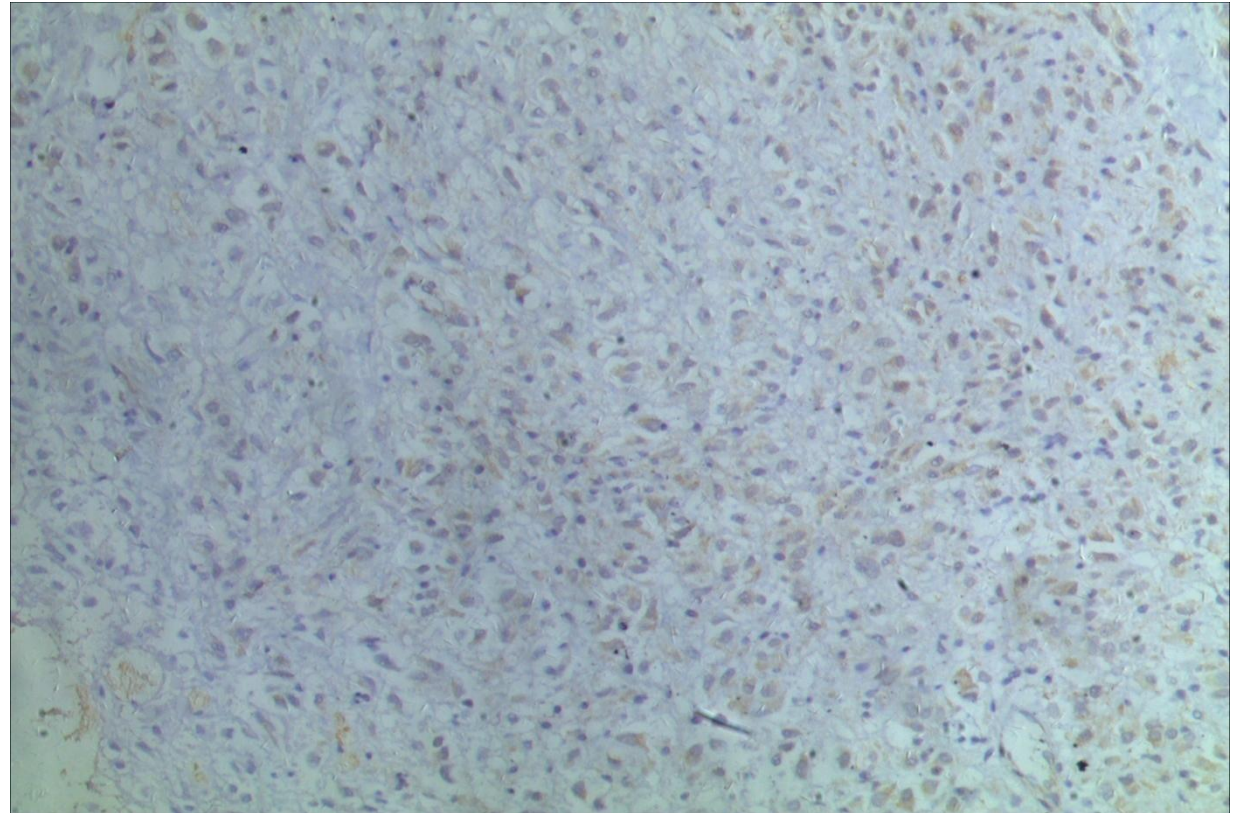
**患者女性，46岁，
临床诊断：肝脏占位，
粗针穿刺活检**



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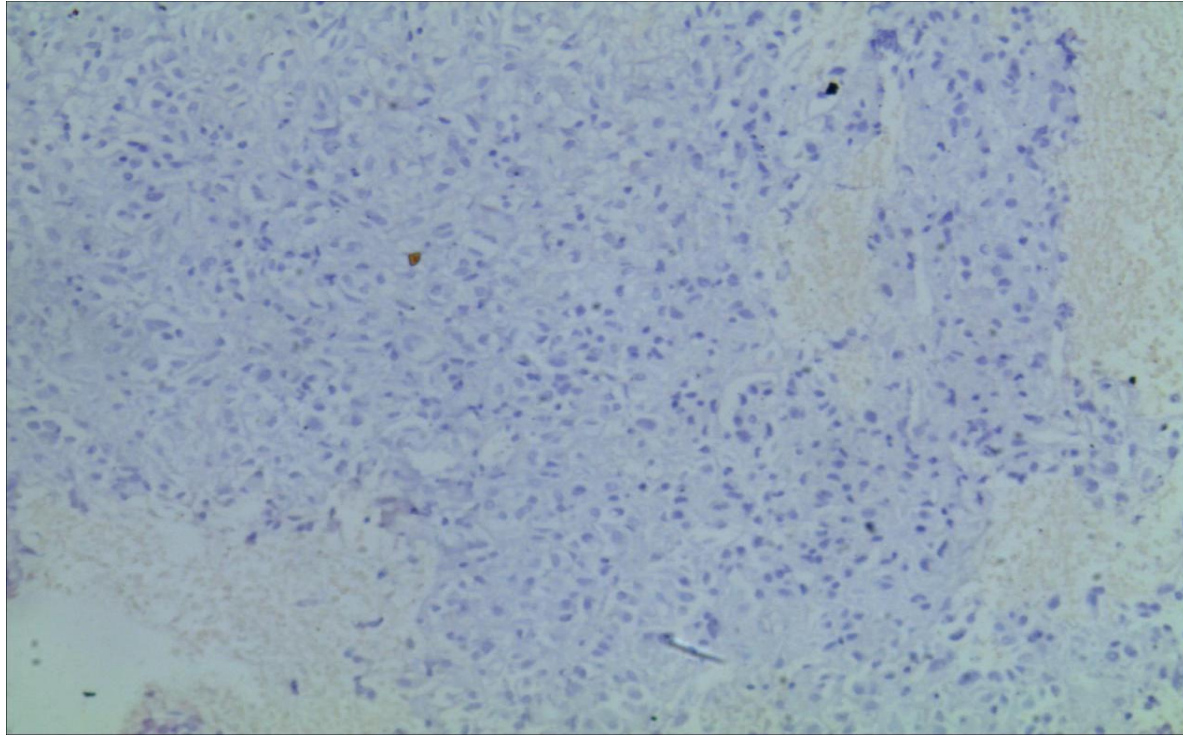
Heppar



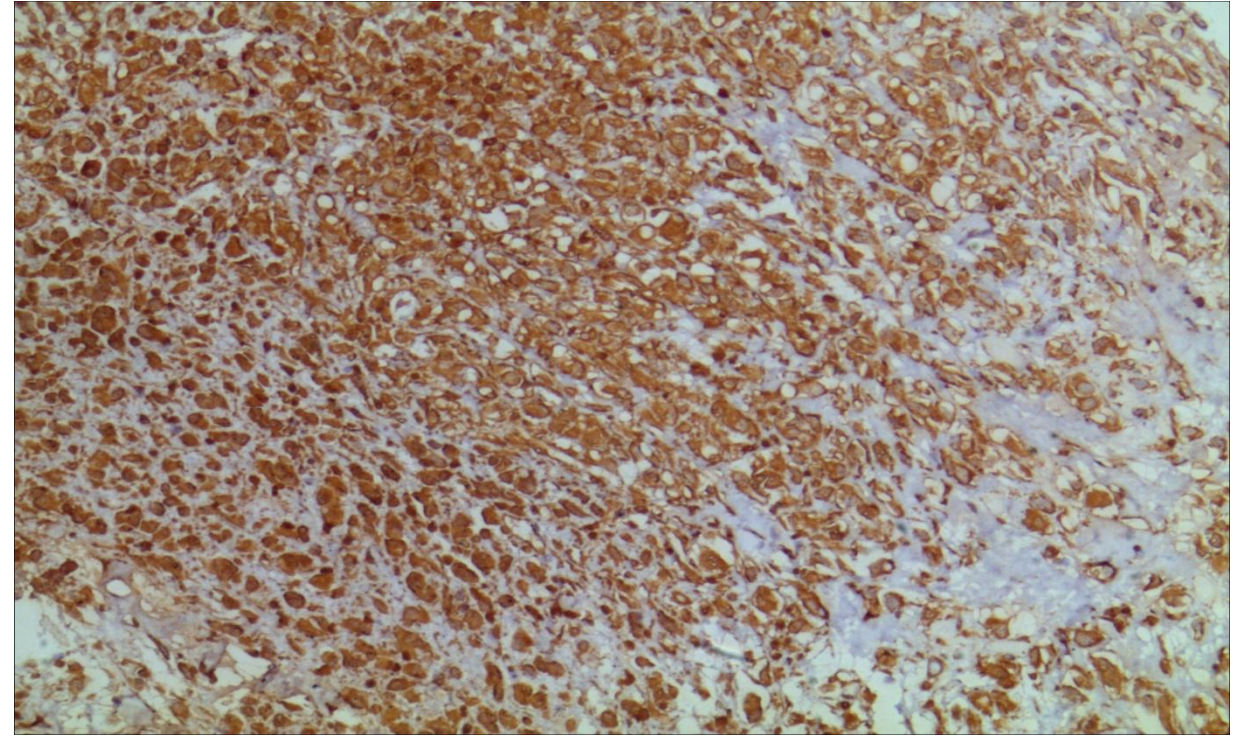
Hepatocyte



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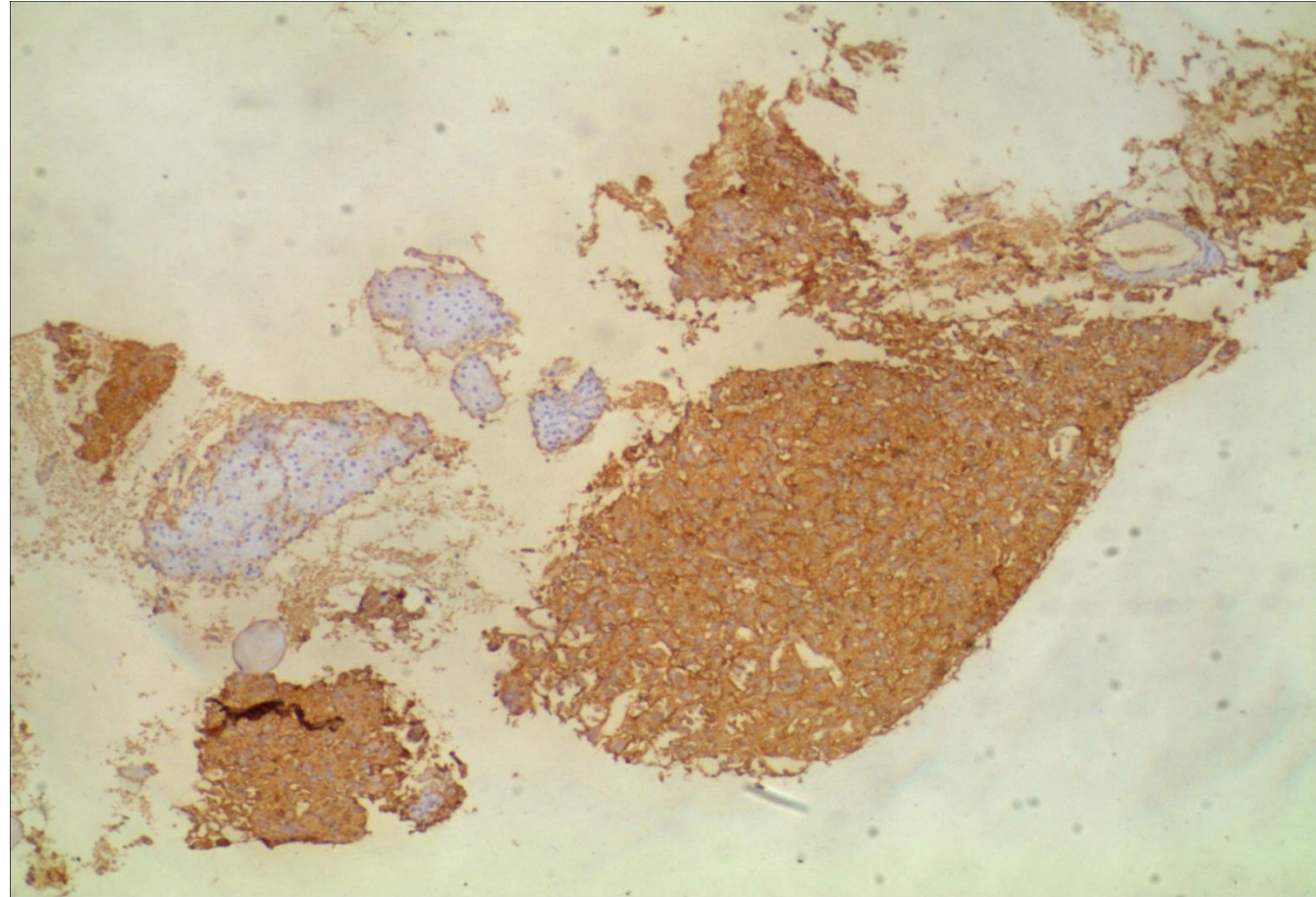


vim(+)



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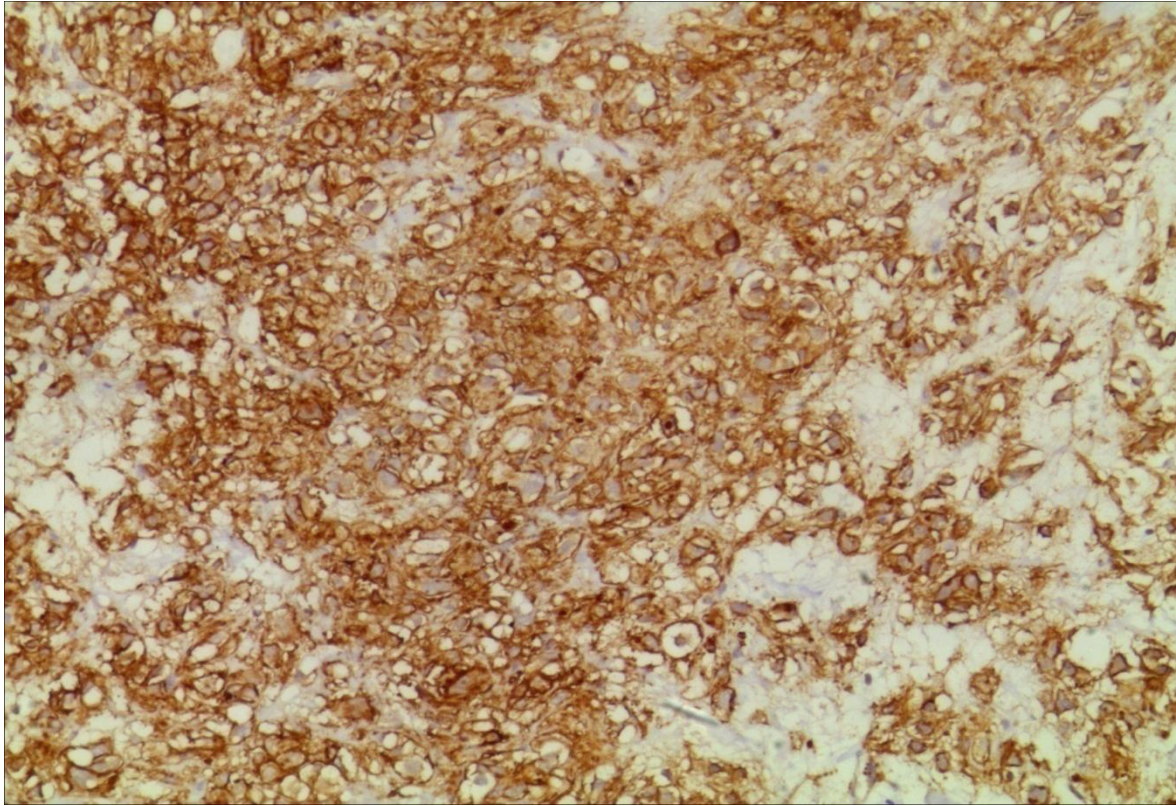
CD34



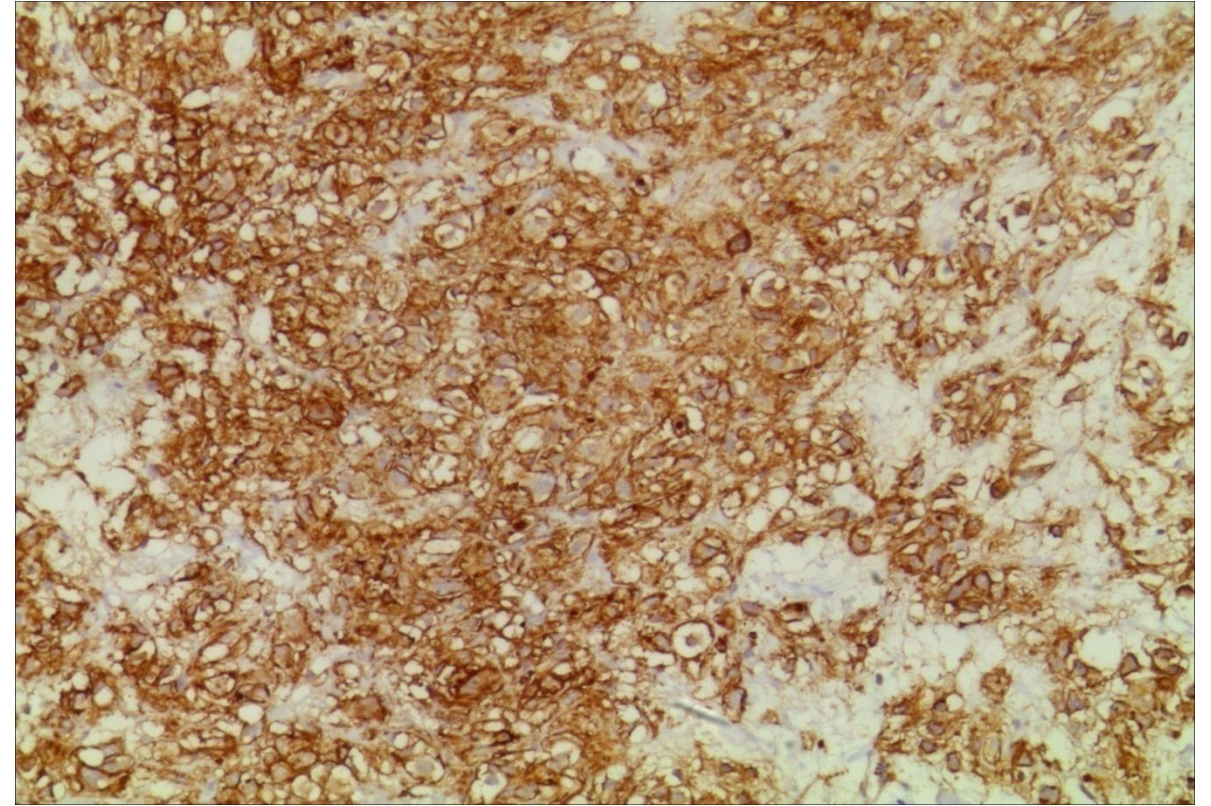


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加做免疫组化标记：



DOG-1



CD117



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病理诊断：

肝脏转移性胃肠间质瘤



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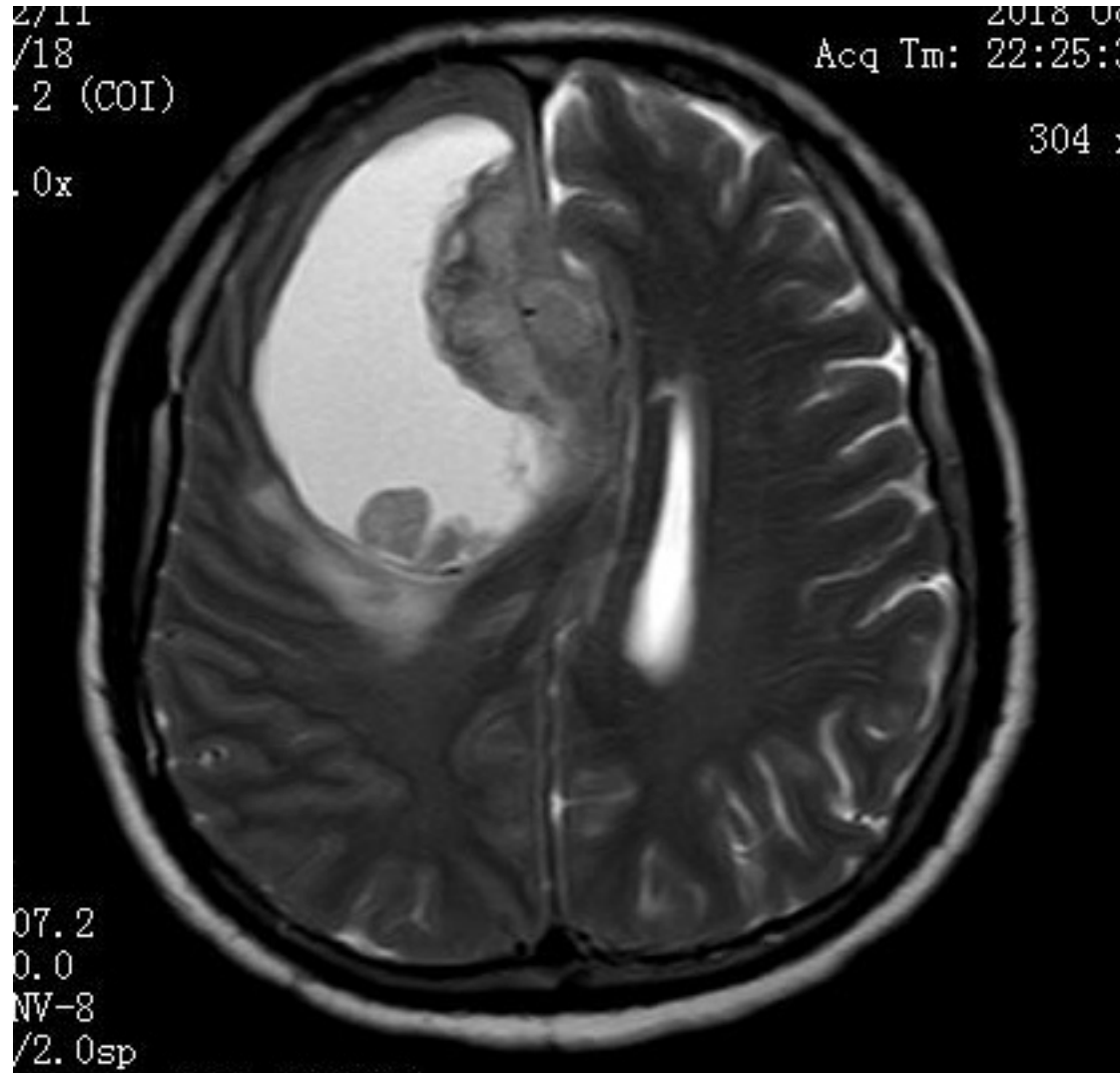
免疫组化的作用与意义-判断肿瘤良恶性及组织学类型 病例10

- **病史**：患者男性，47岁，主因“头痛5天”来我院就诊
- **术前临床诊断**：**右额叶占位**
- **送检标本**：灰白色不整形组织两块，总体积为：
6.0×5.0×3.5cm，切面灰白色、实性、质地嫩



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术前影像学资料





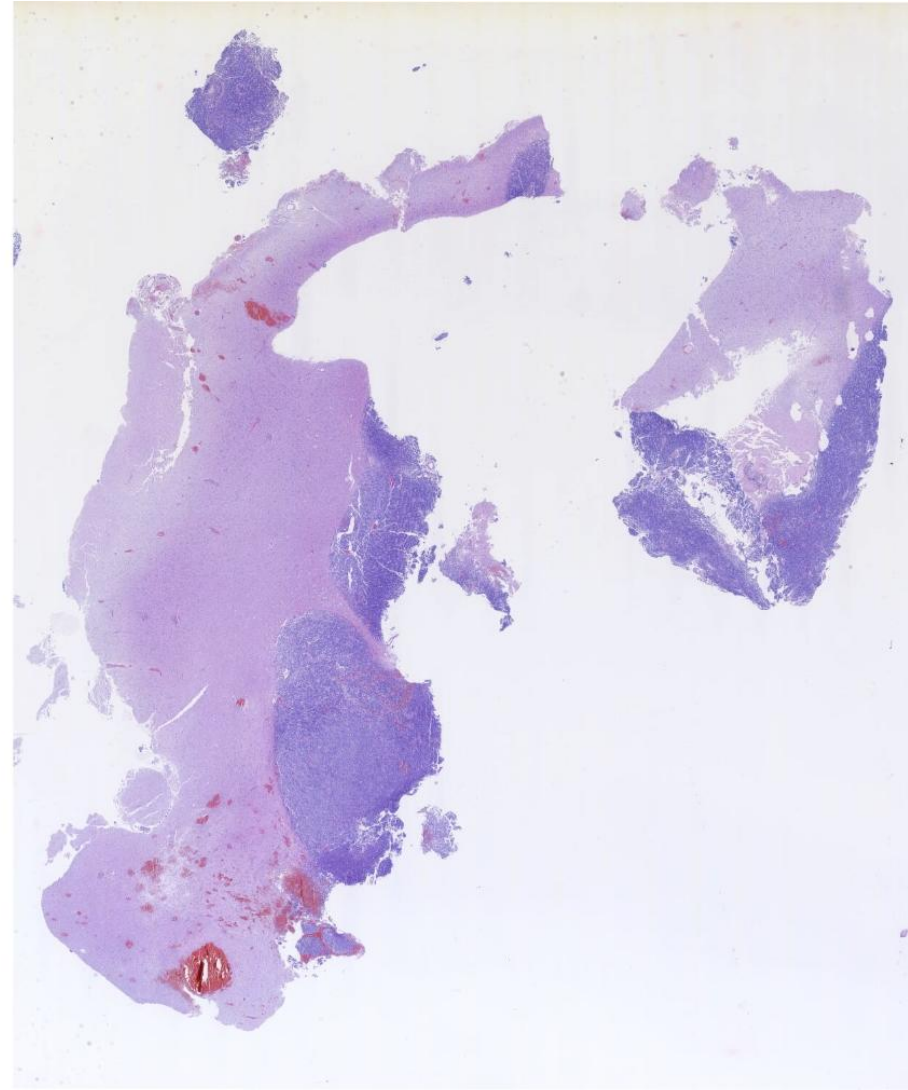
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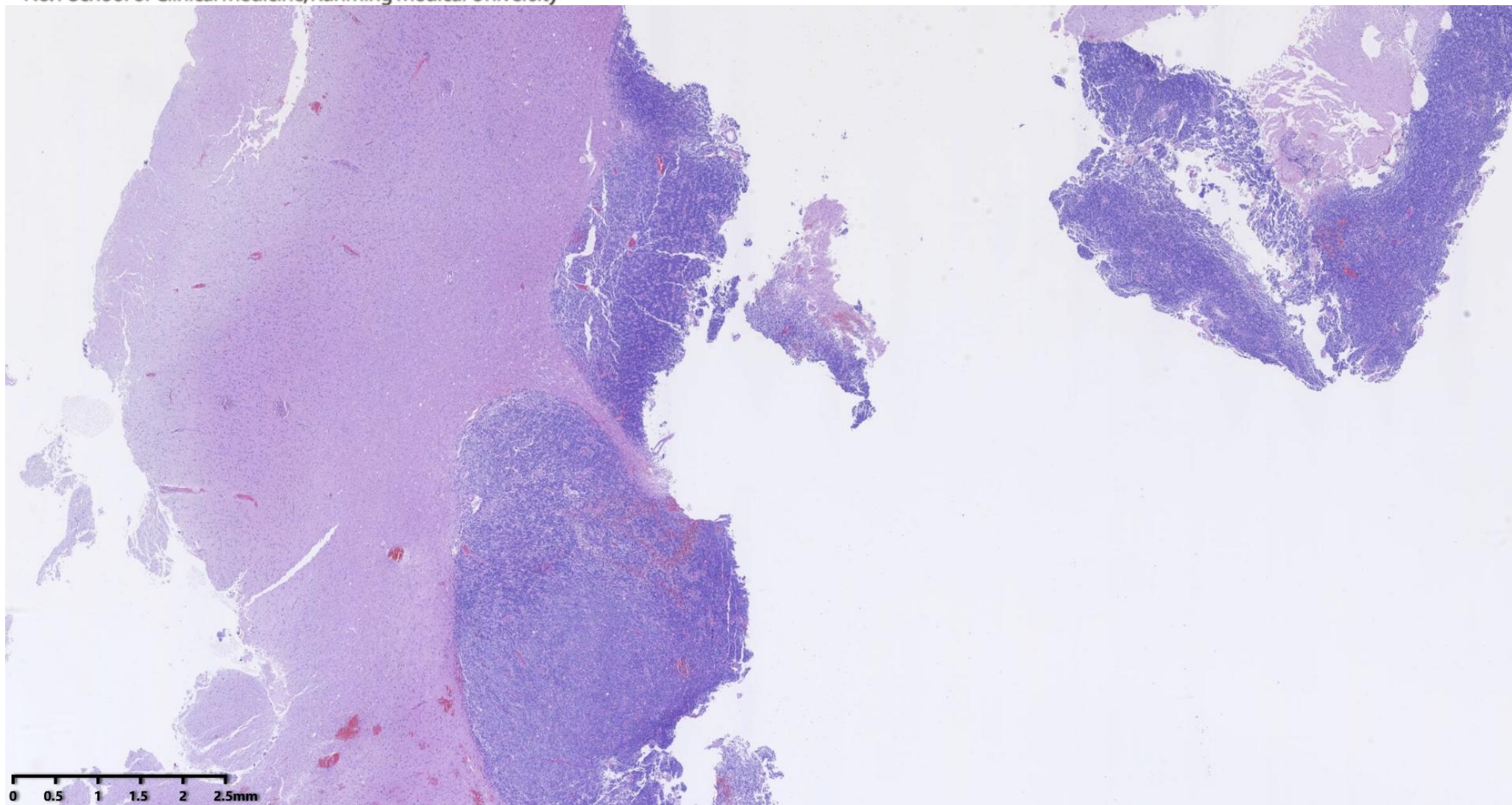
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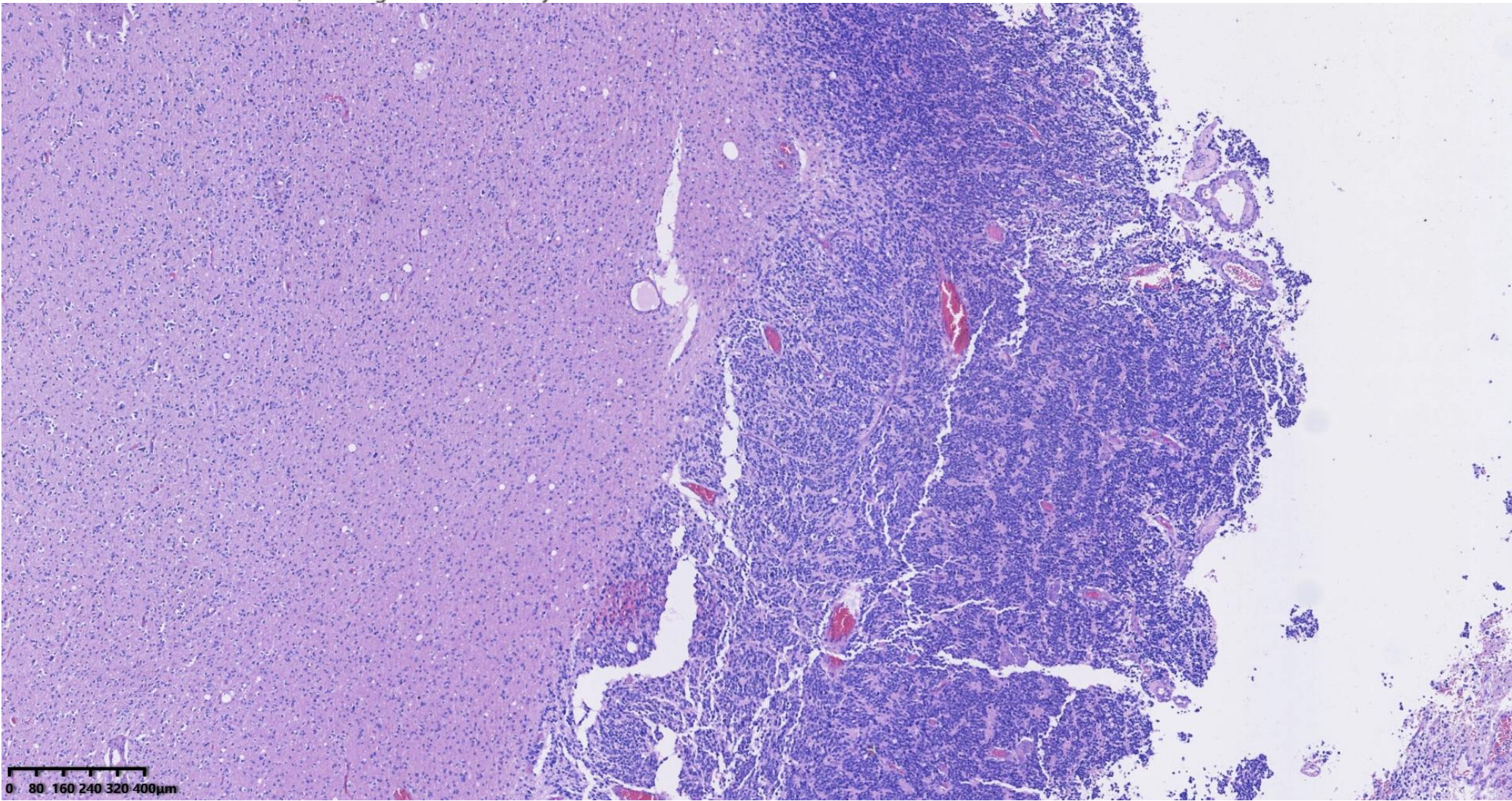


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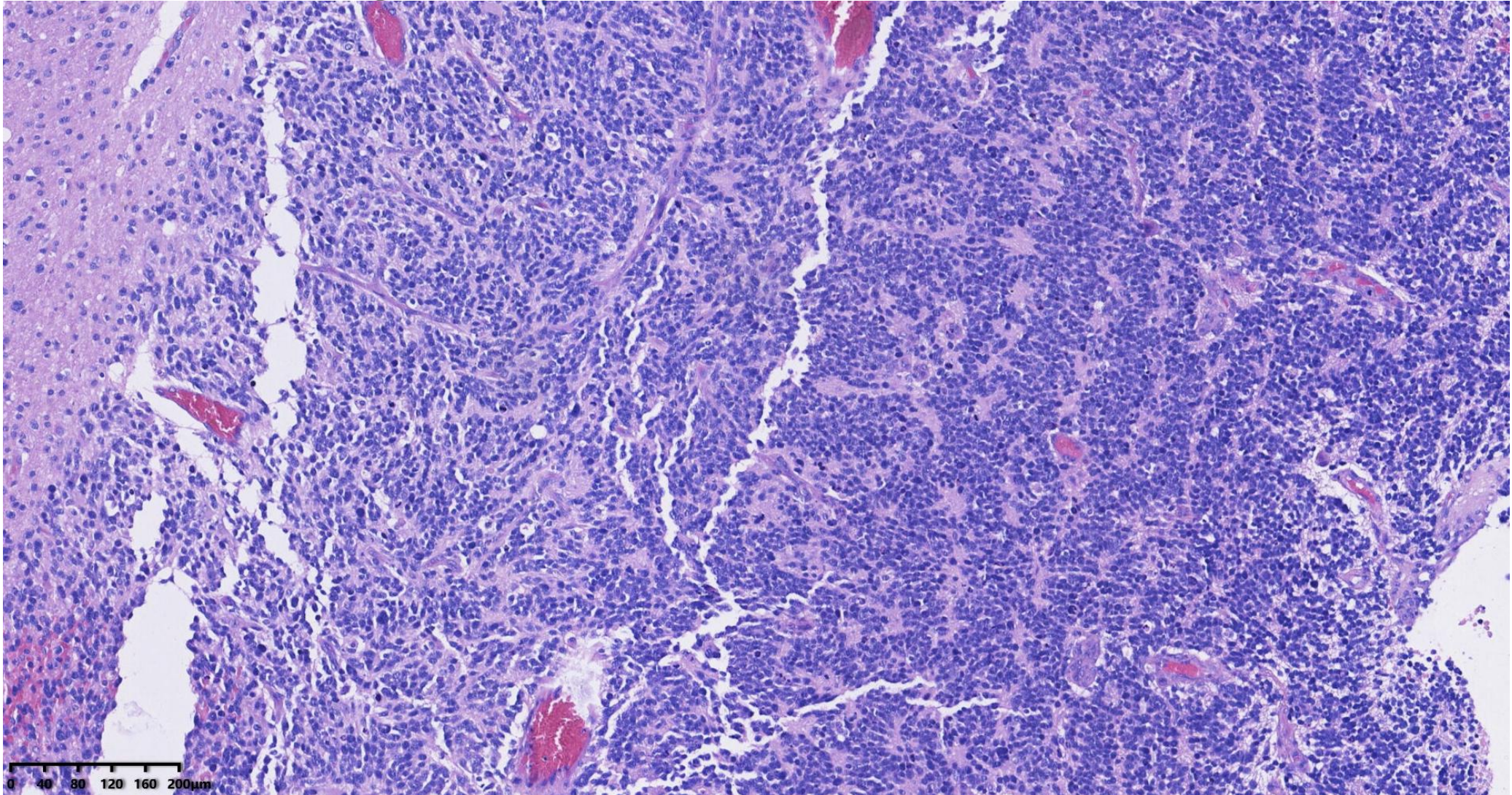


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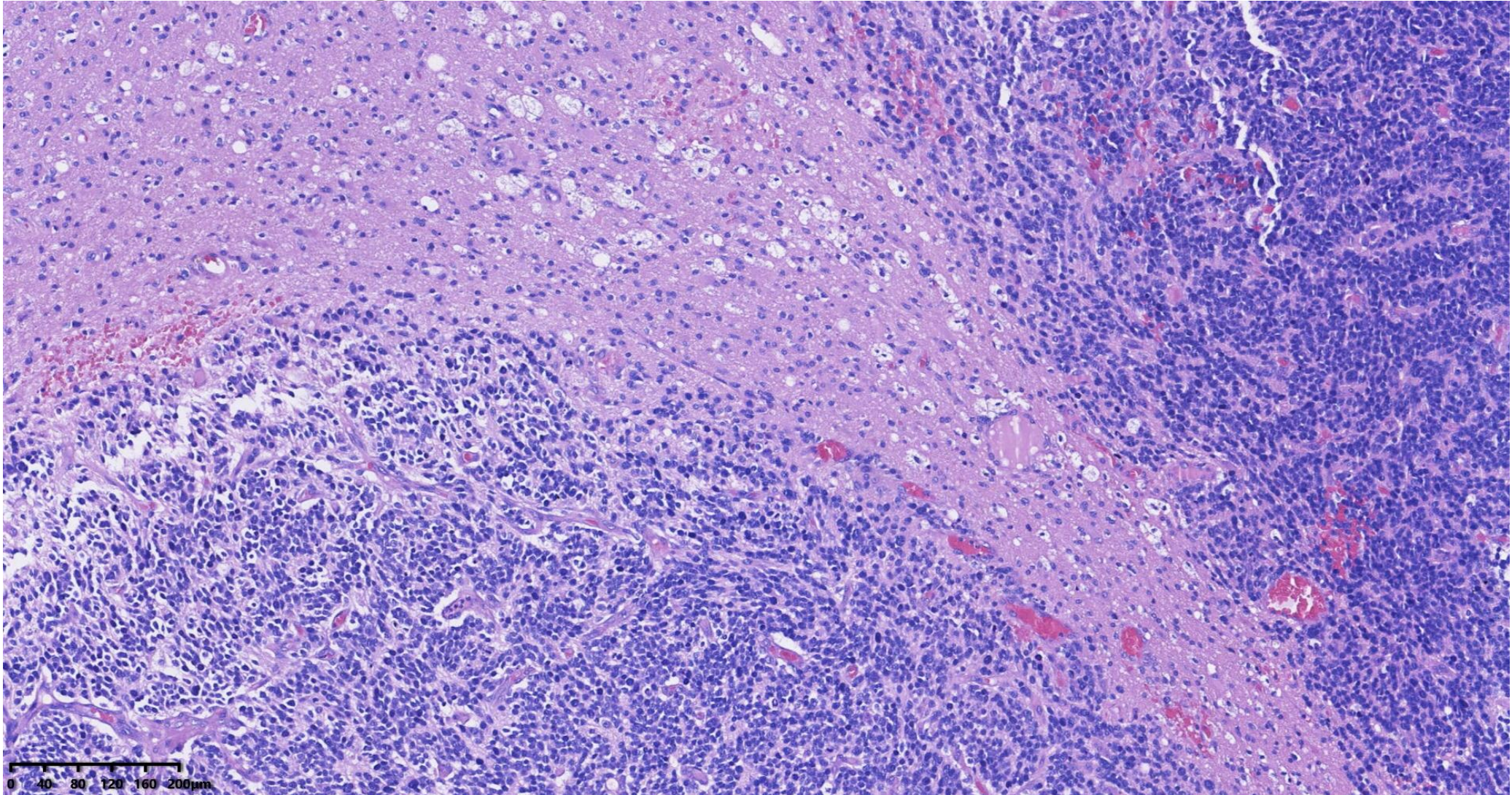


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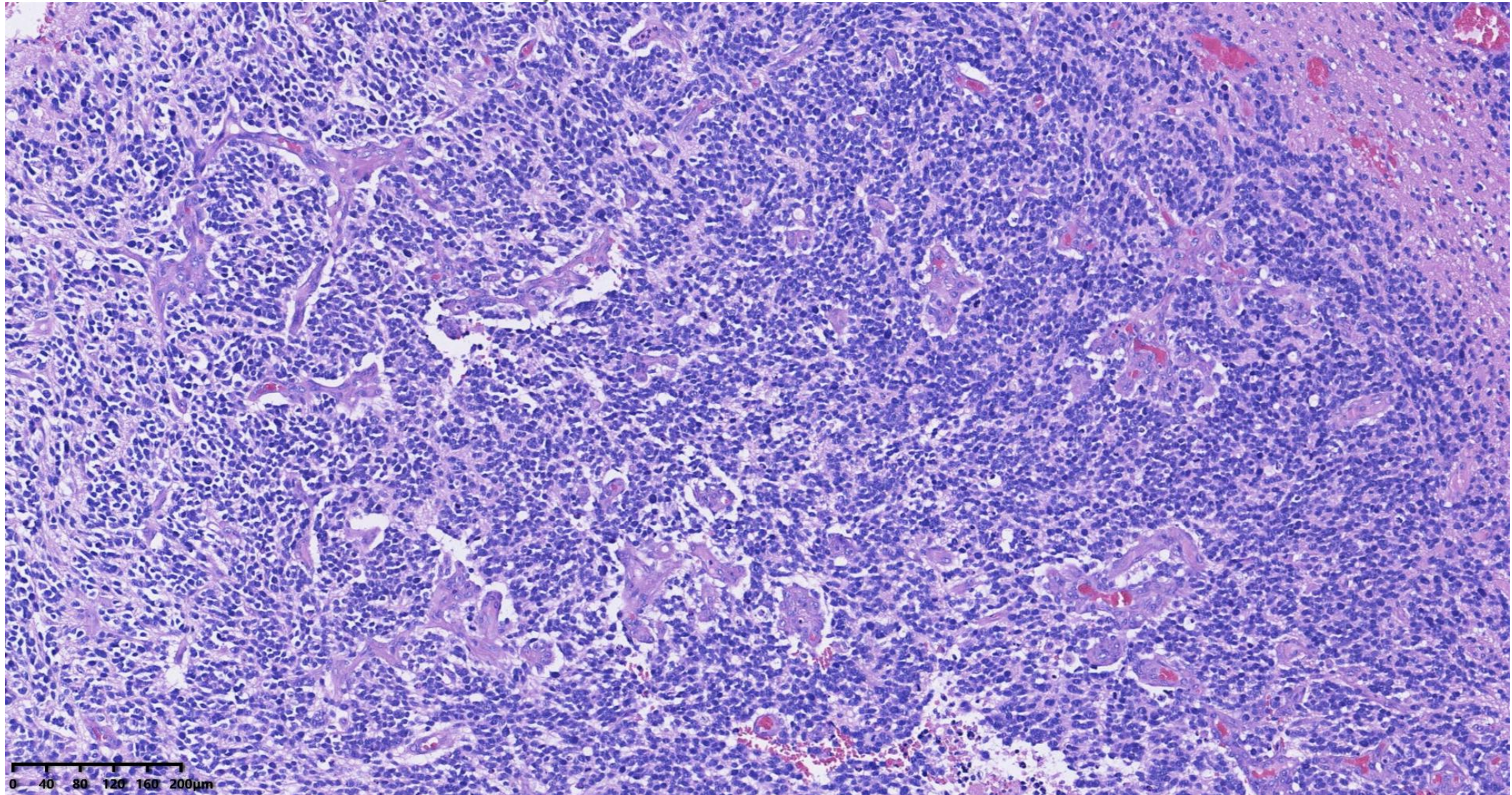


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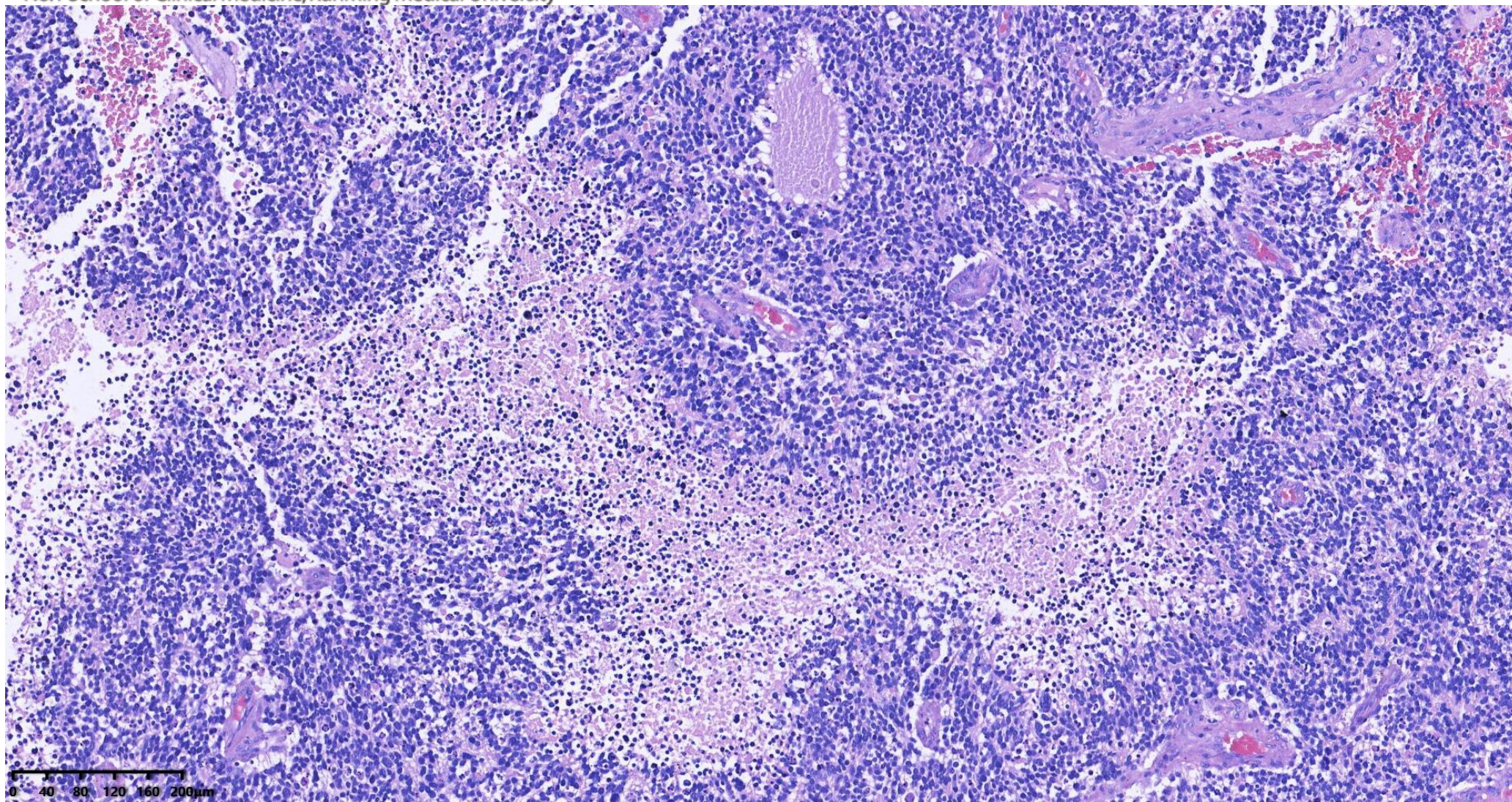


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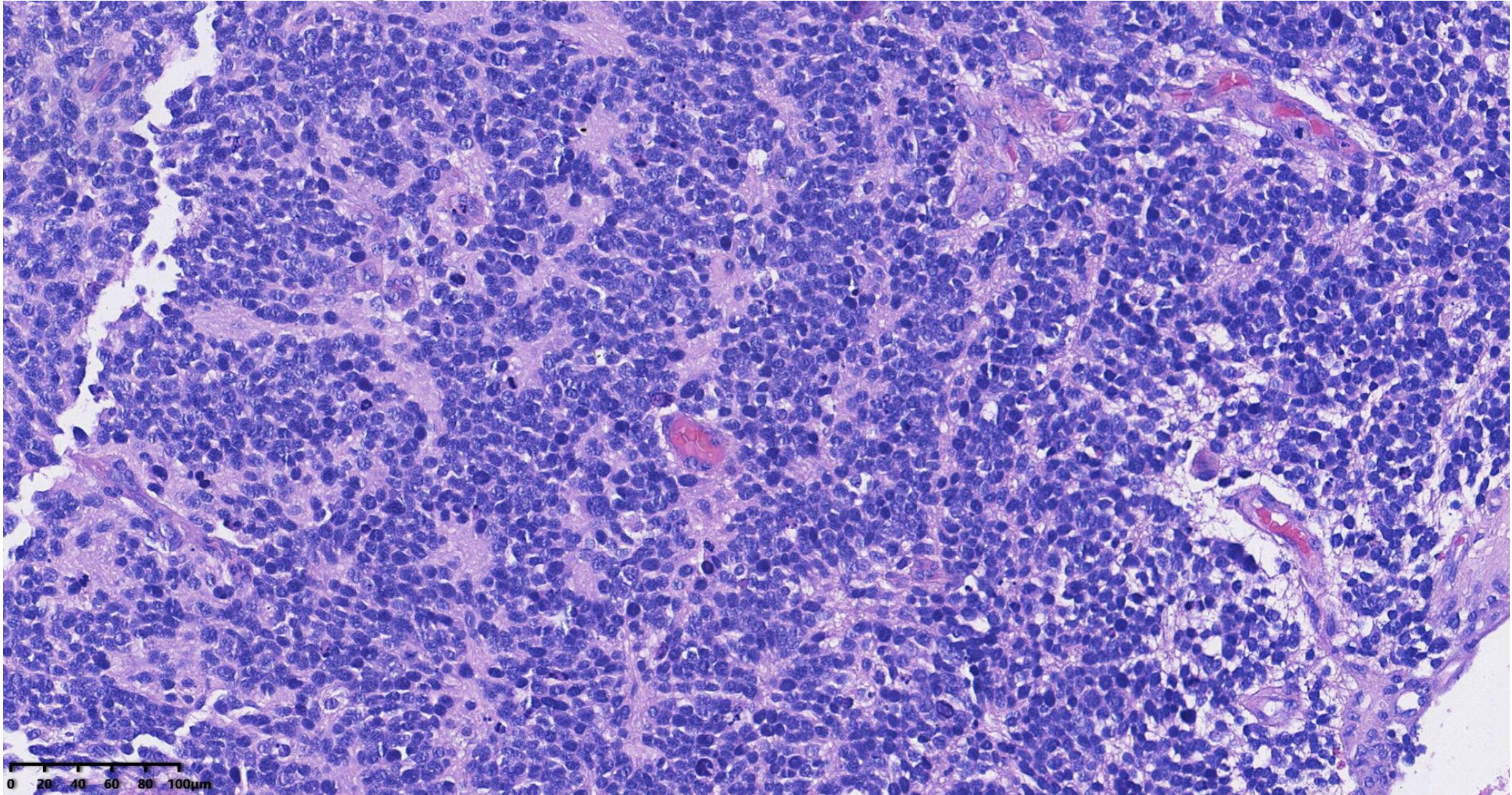


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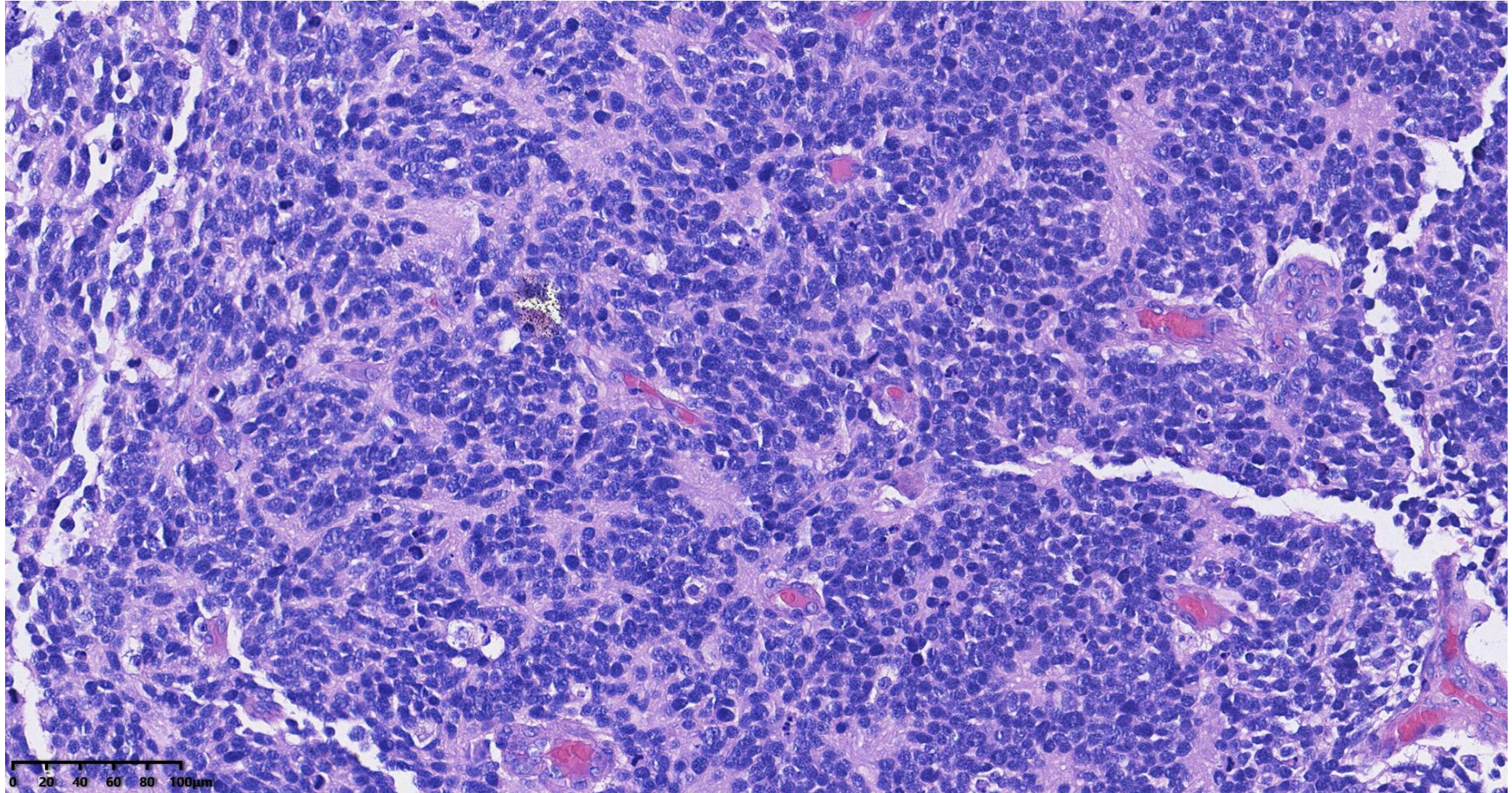


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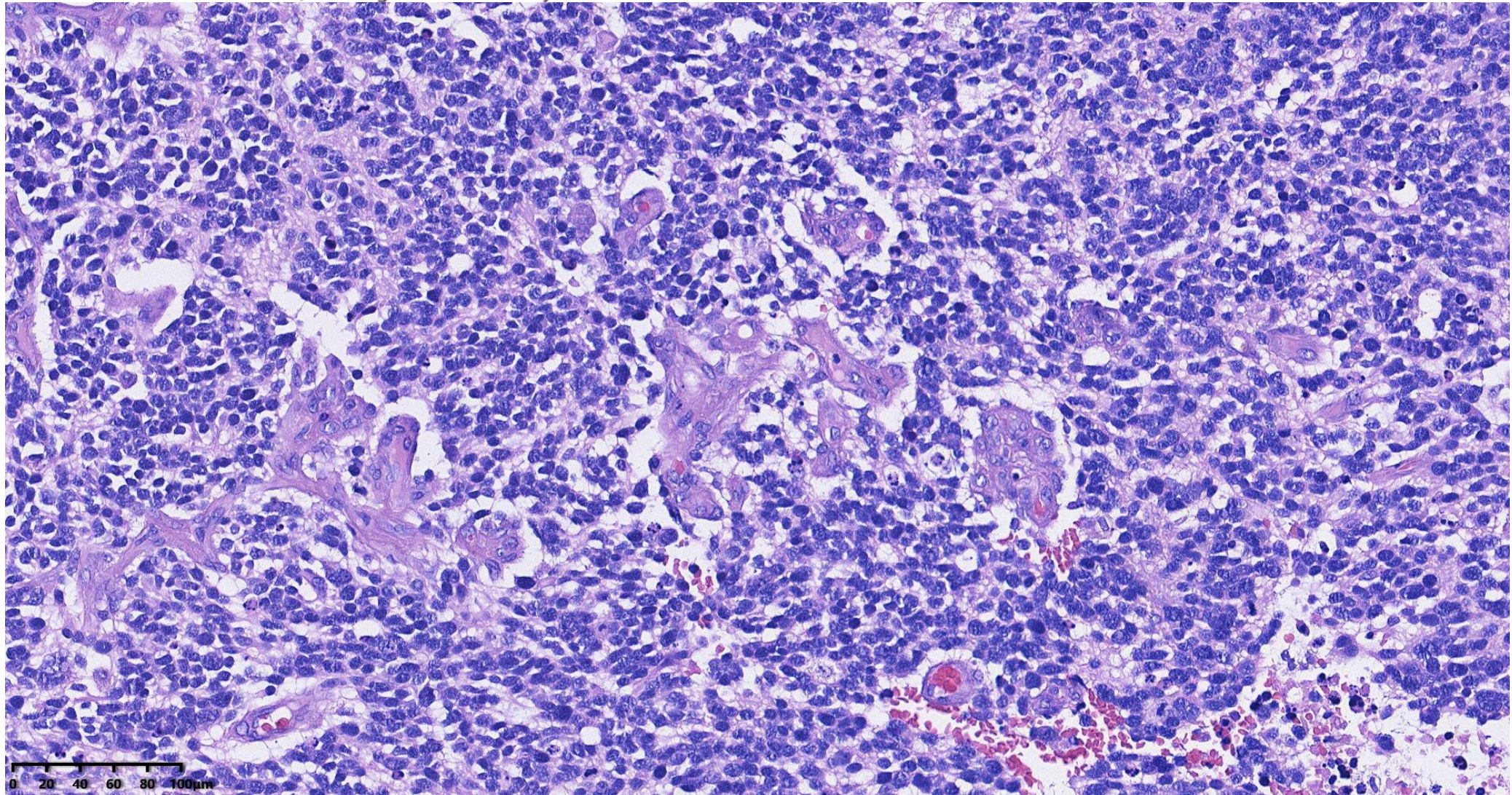


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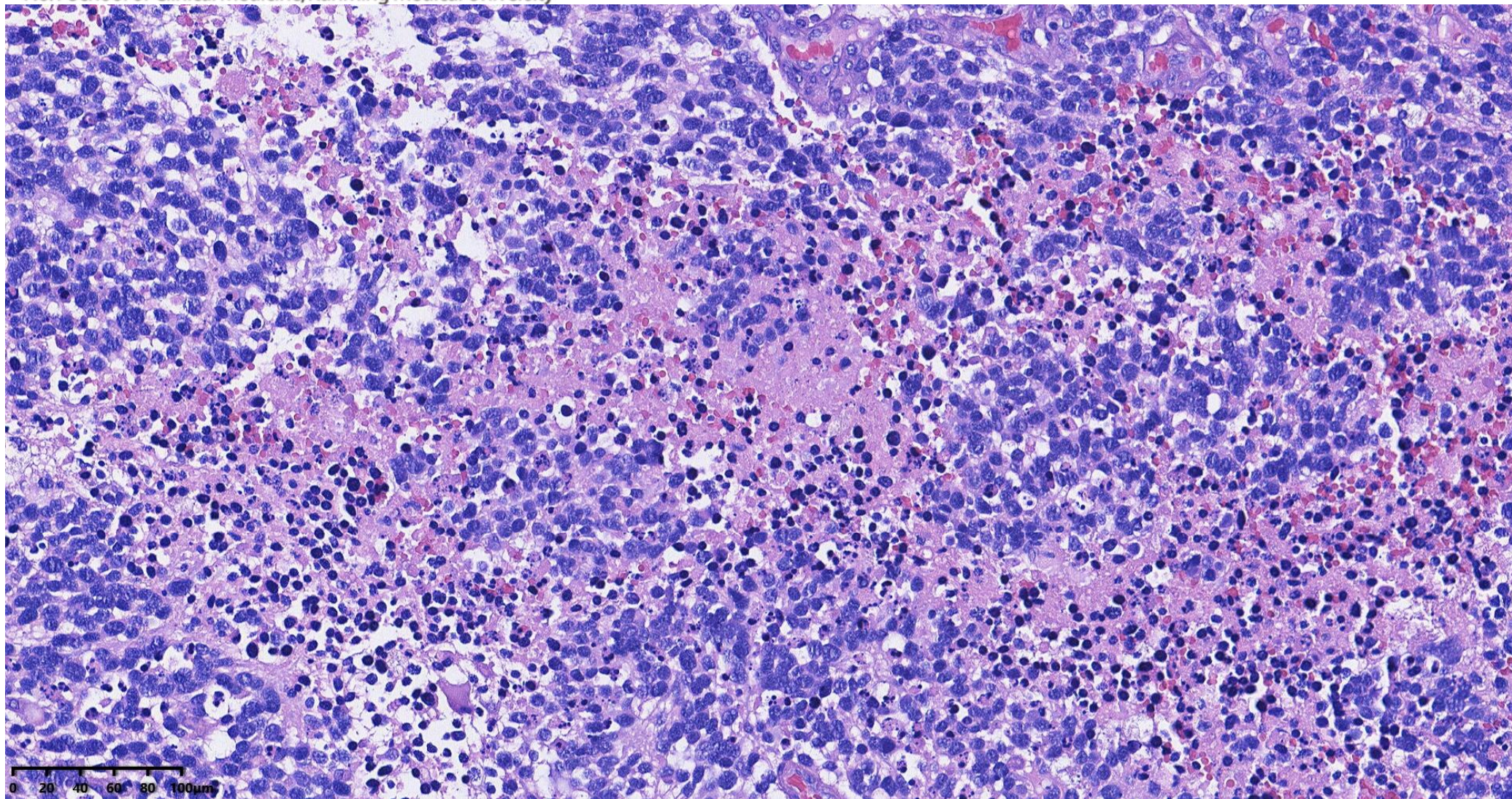


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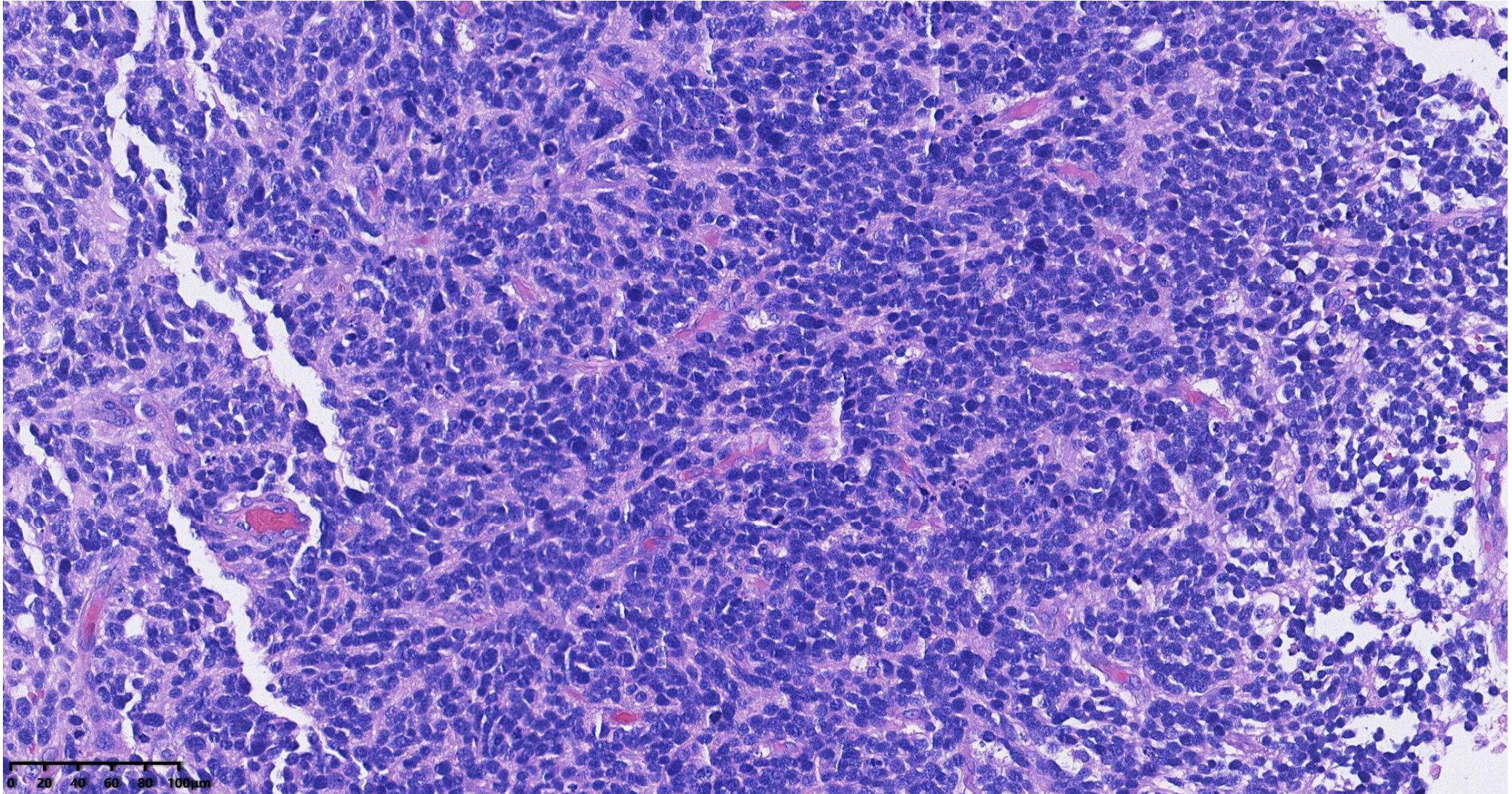


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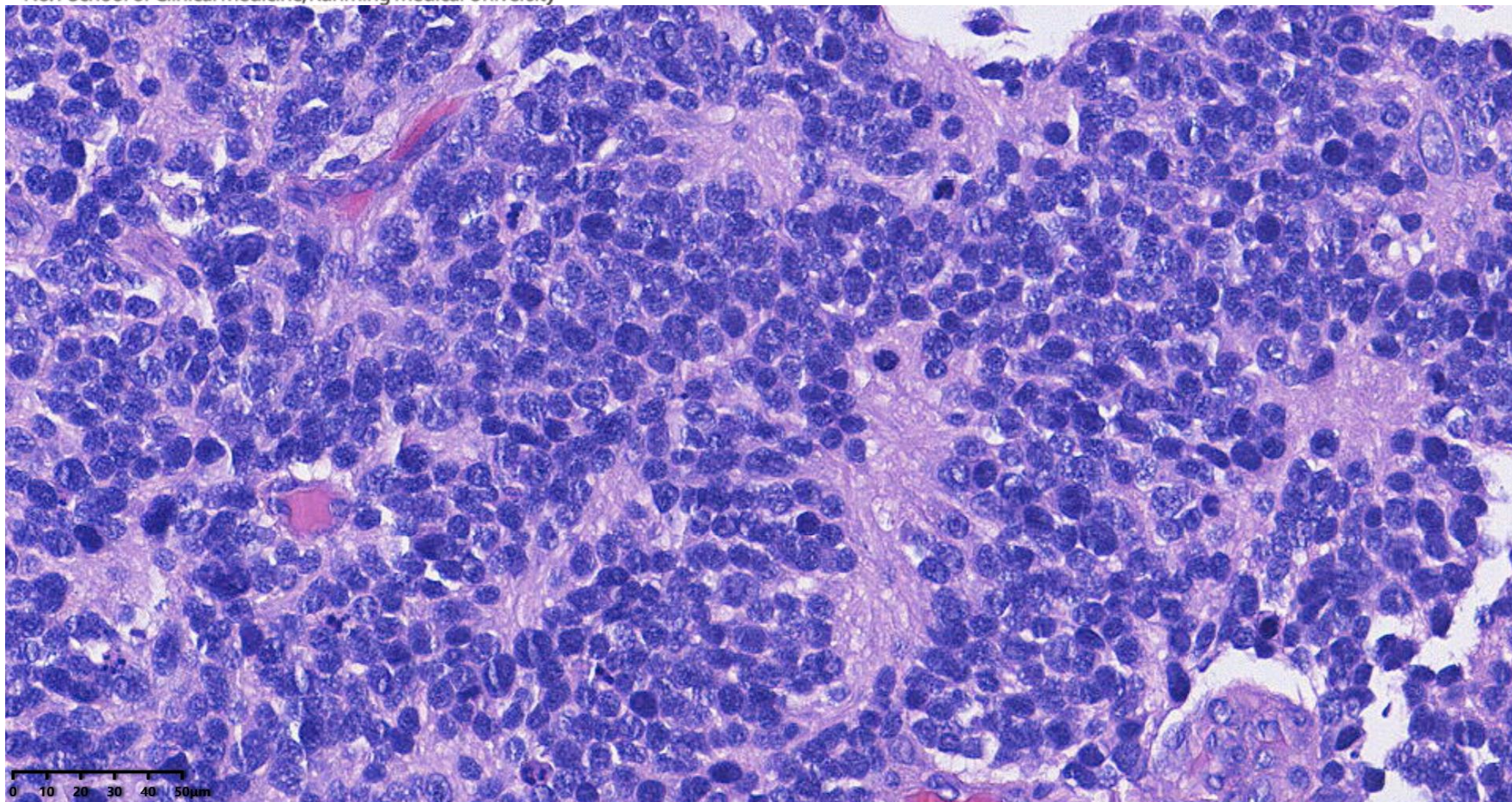


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诊断思路

- 患者为成年人
- 病变位于中枢神经系统，幕上，影像学支持病变位于右额叶脑实质
- 肿瘤细胞密度高，异型性明显，片状坏死，核分裂像多见
- 高级别胶质肿瘤？
- 高级别神经上皮肿瘤？
- 转移瘤？
-



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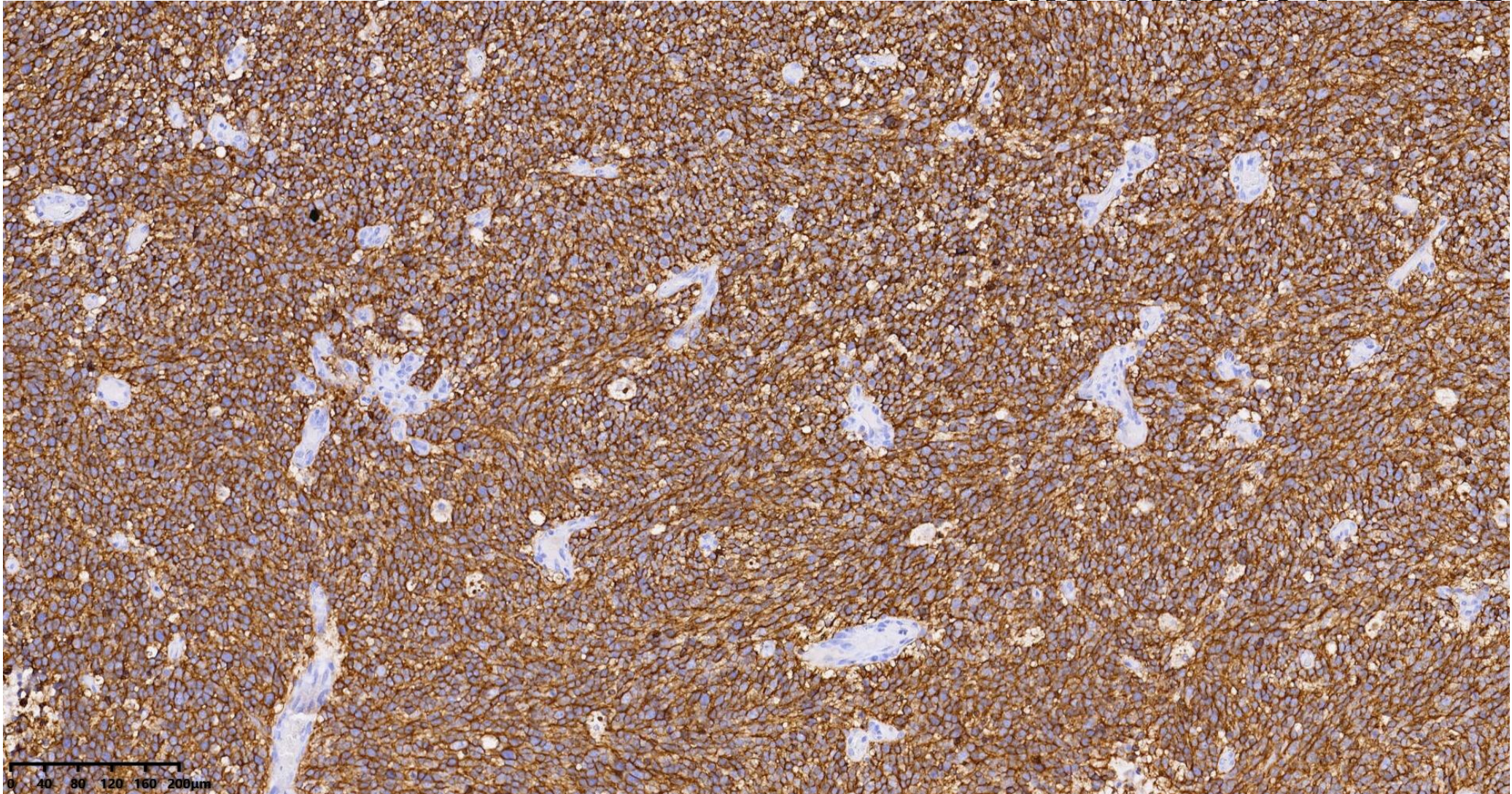
初步病理诊断

- **（右额叶占位）恶性肿瘤，目前正行免疫组化协助明确组织学类型。**



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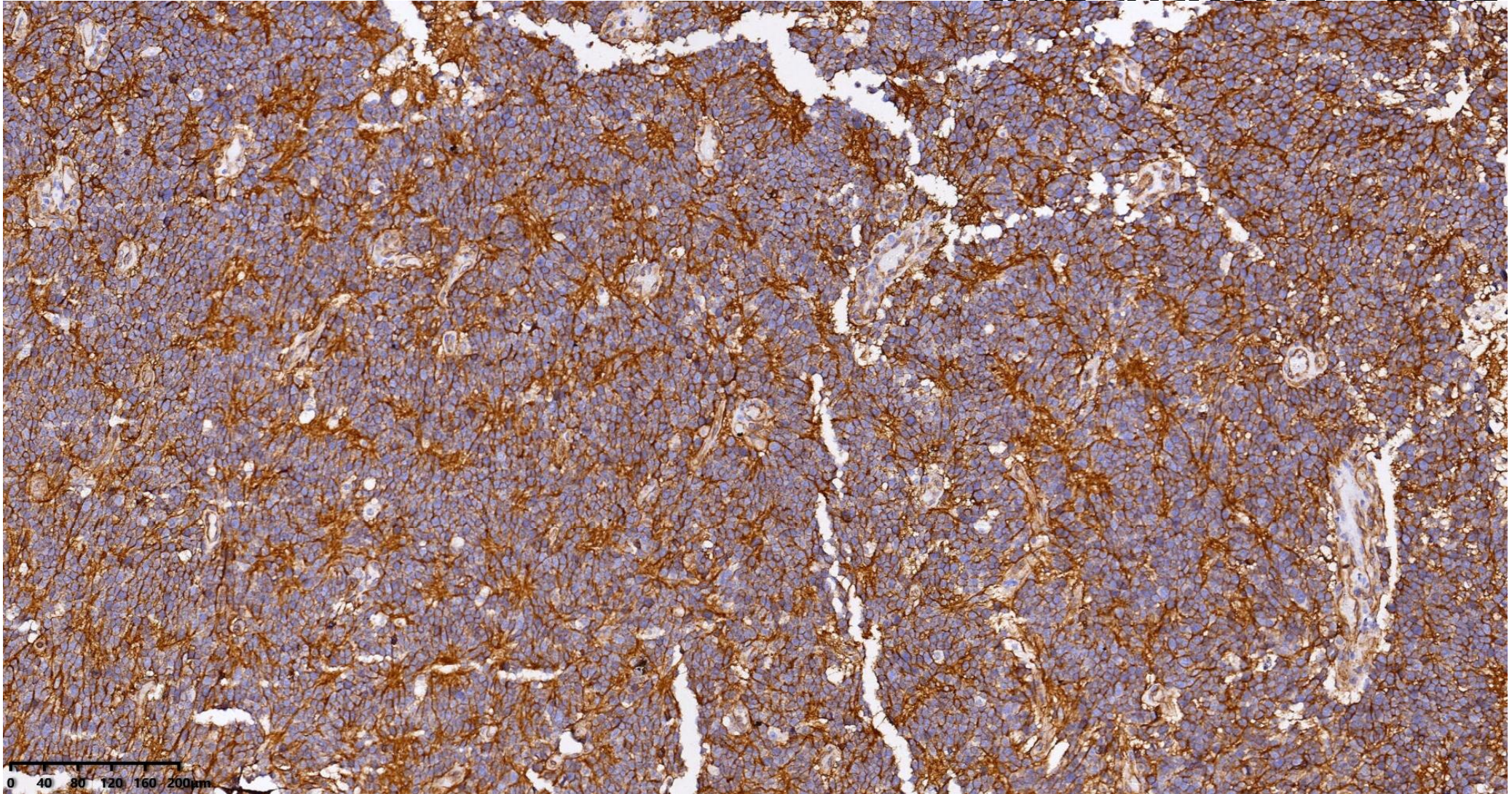
免疫组织化学-CD56





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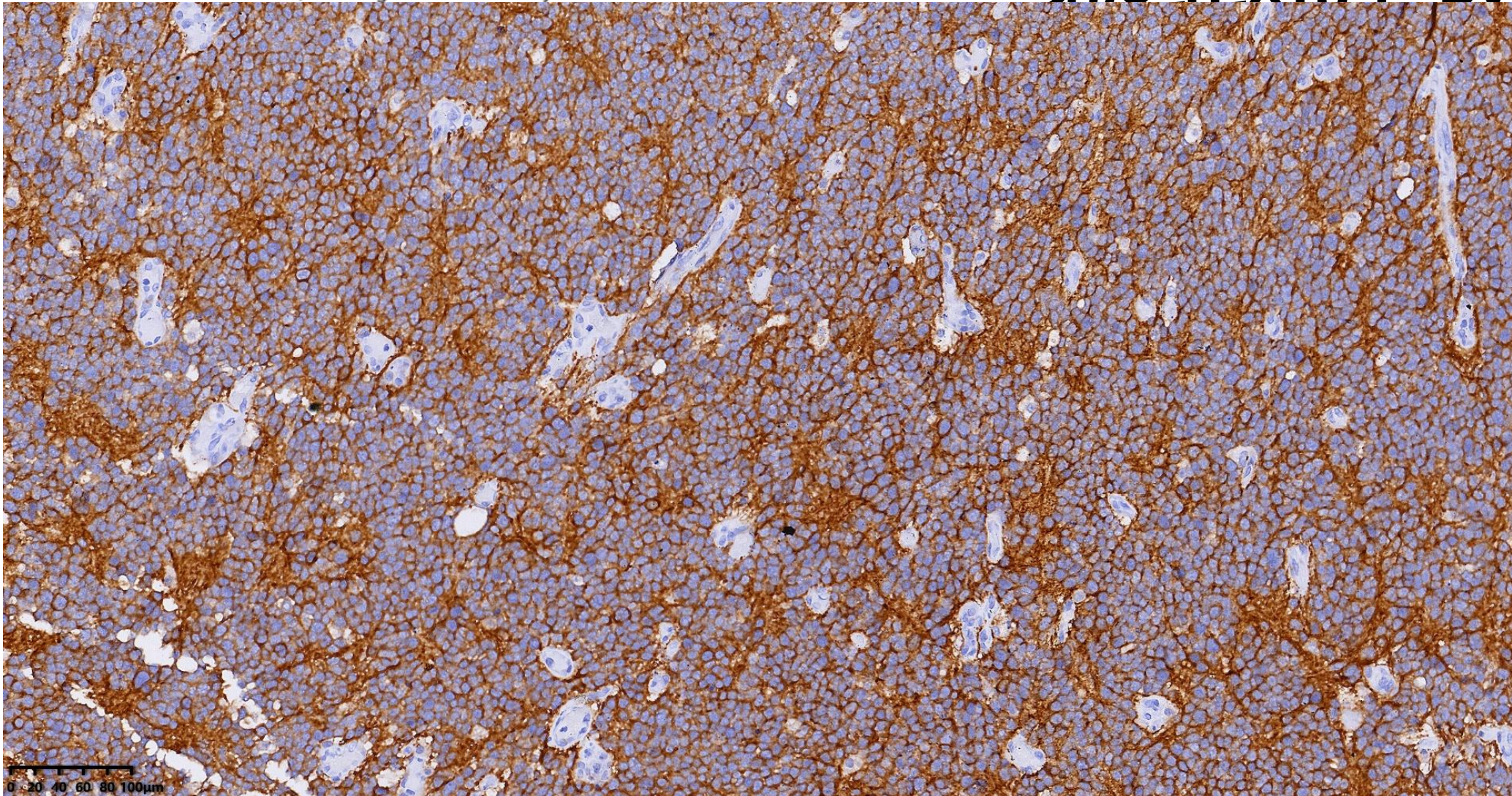
免疫组织化学-CD99





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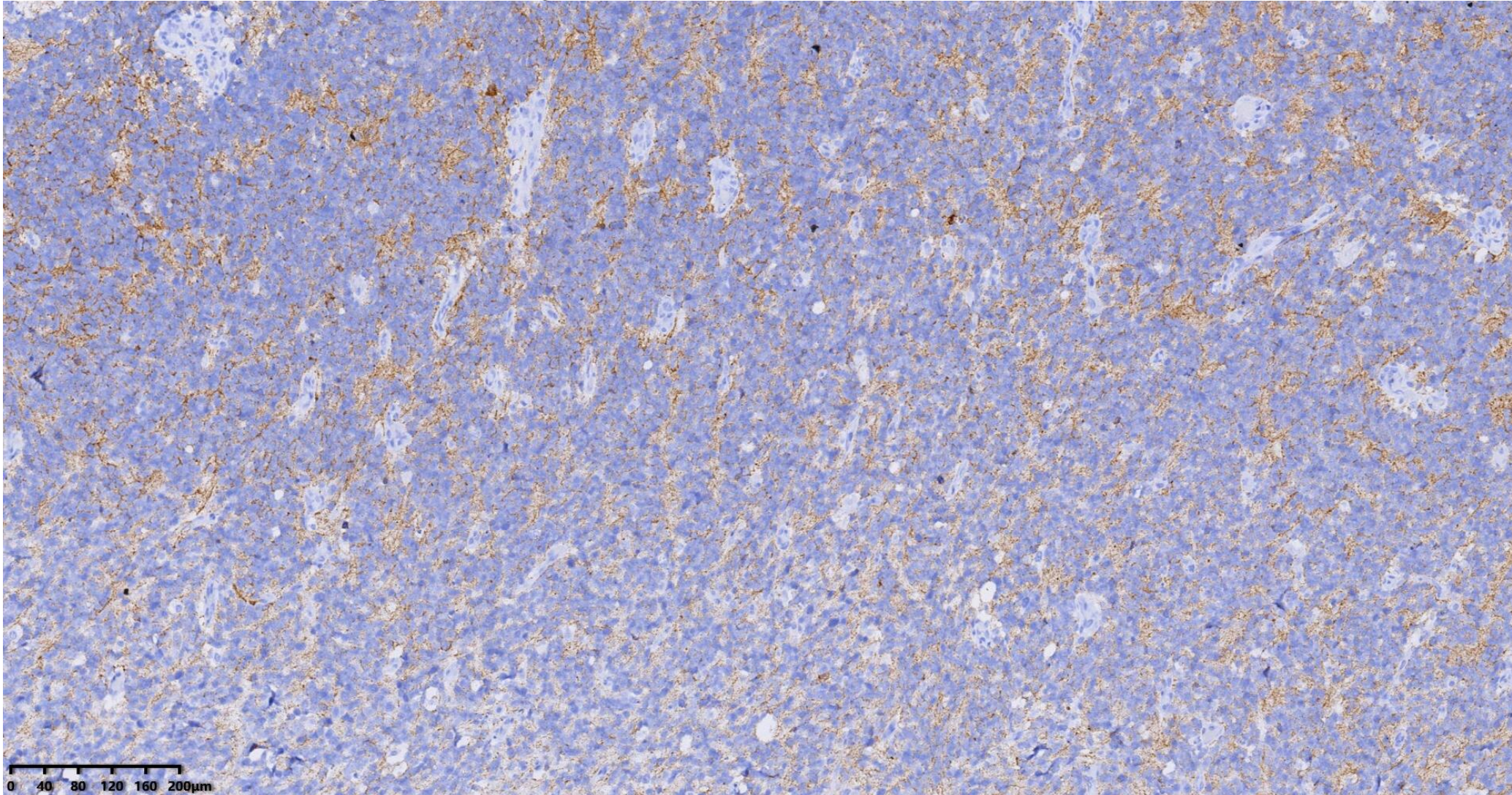
免疫组织化学-Syn





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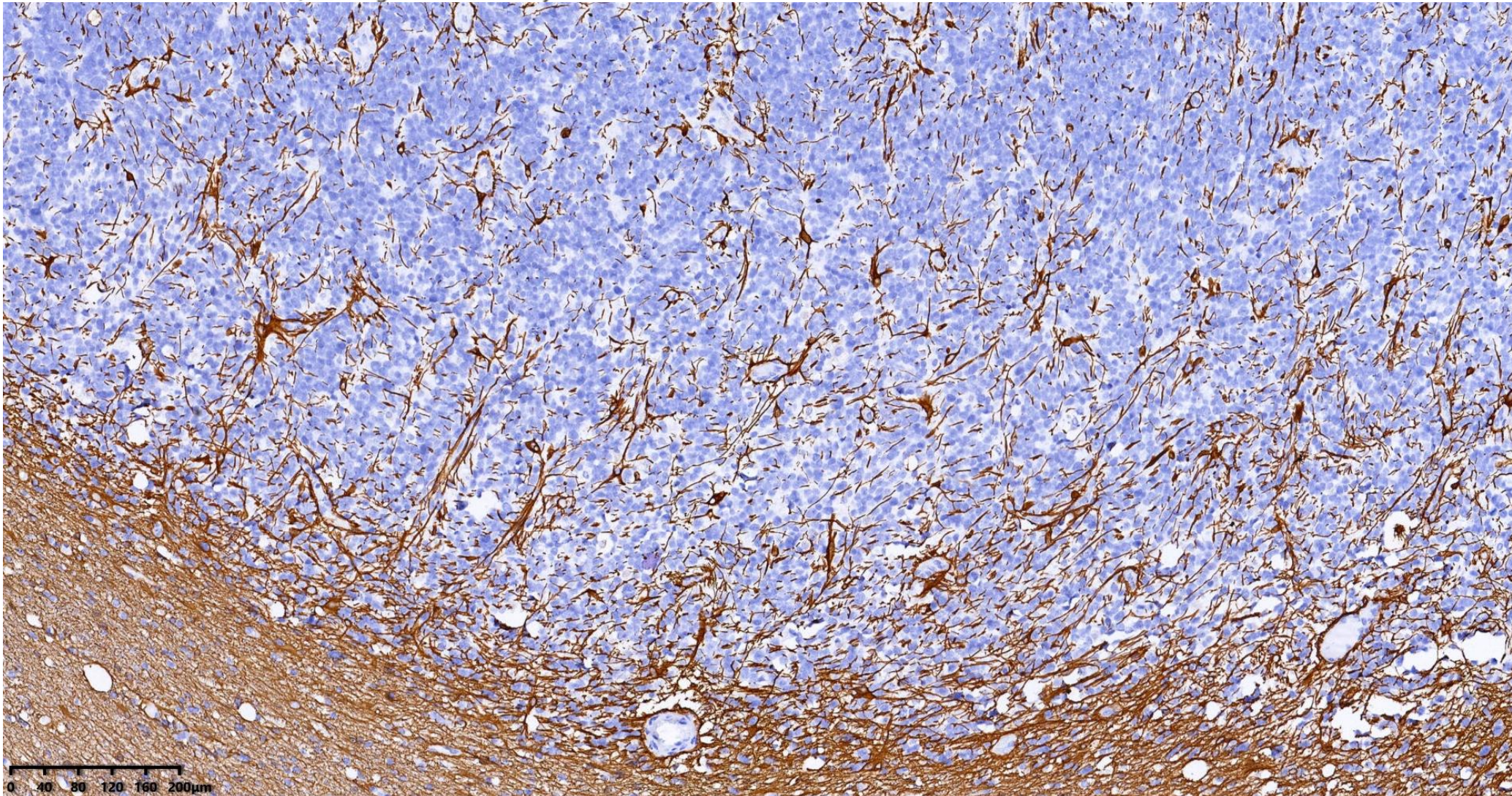
免疫组织化学-CgA





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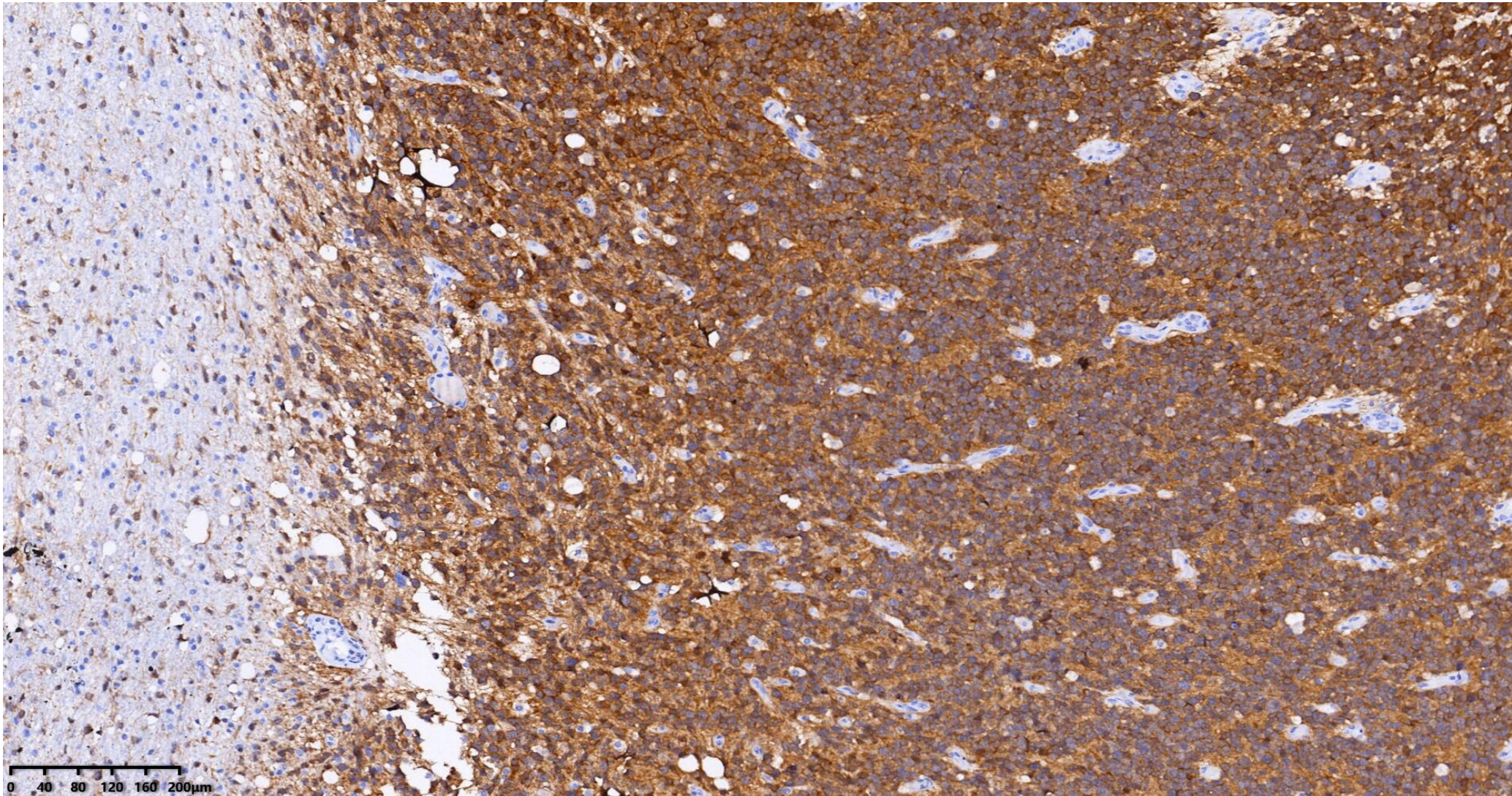
免疫组织化学-GFAP





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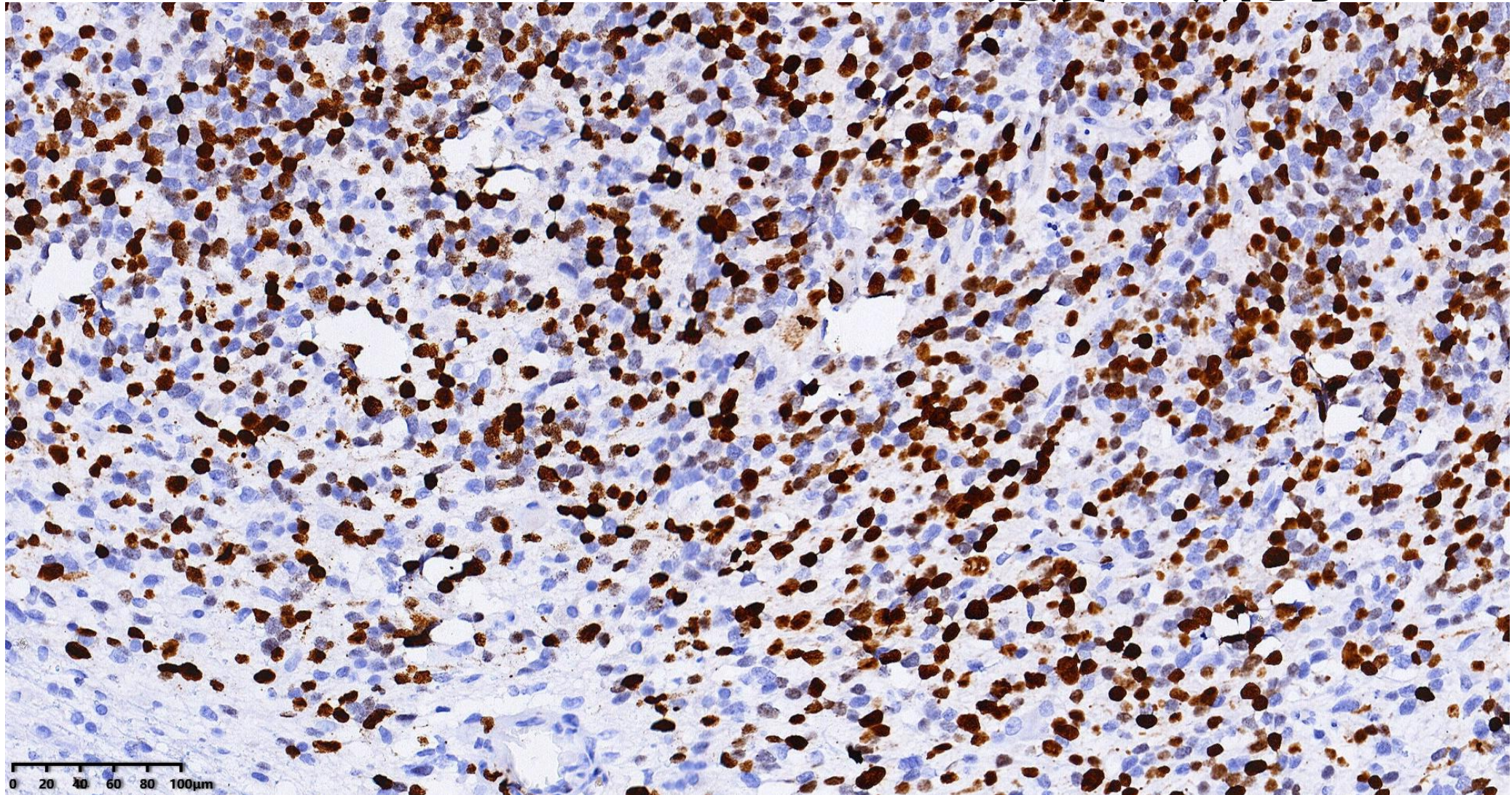
免疫组织化学-IDH-1





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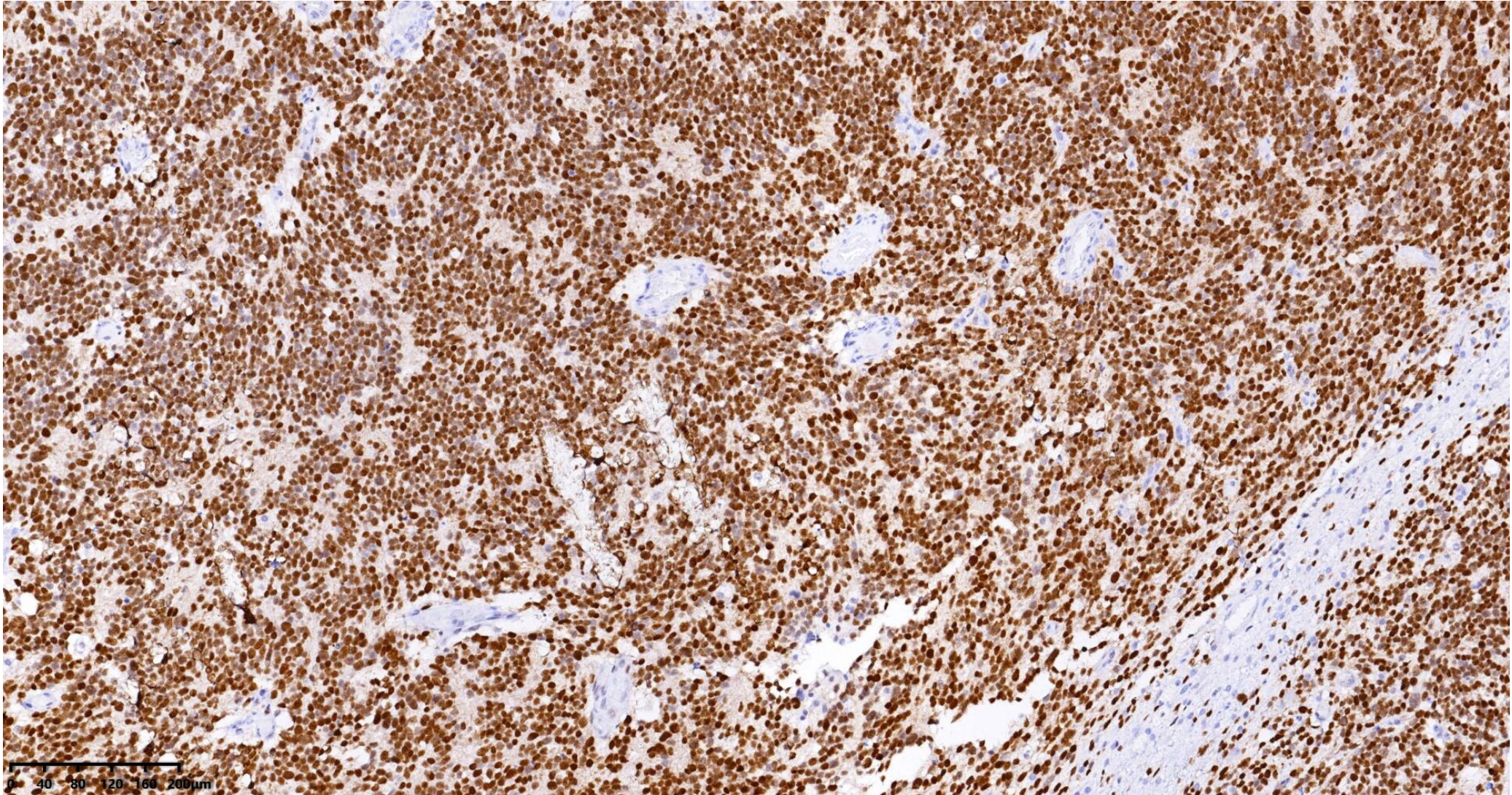
免疫组织化学-Ki-67





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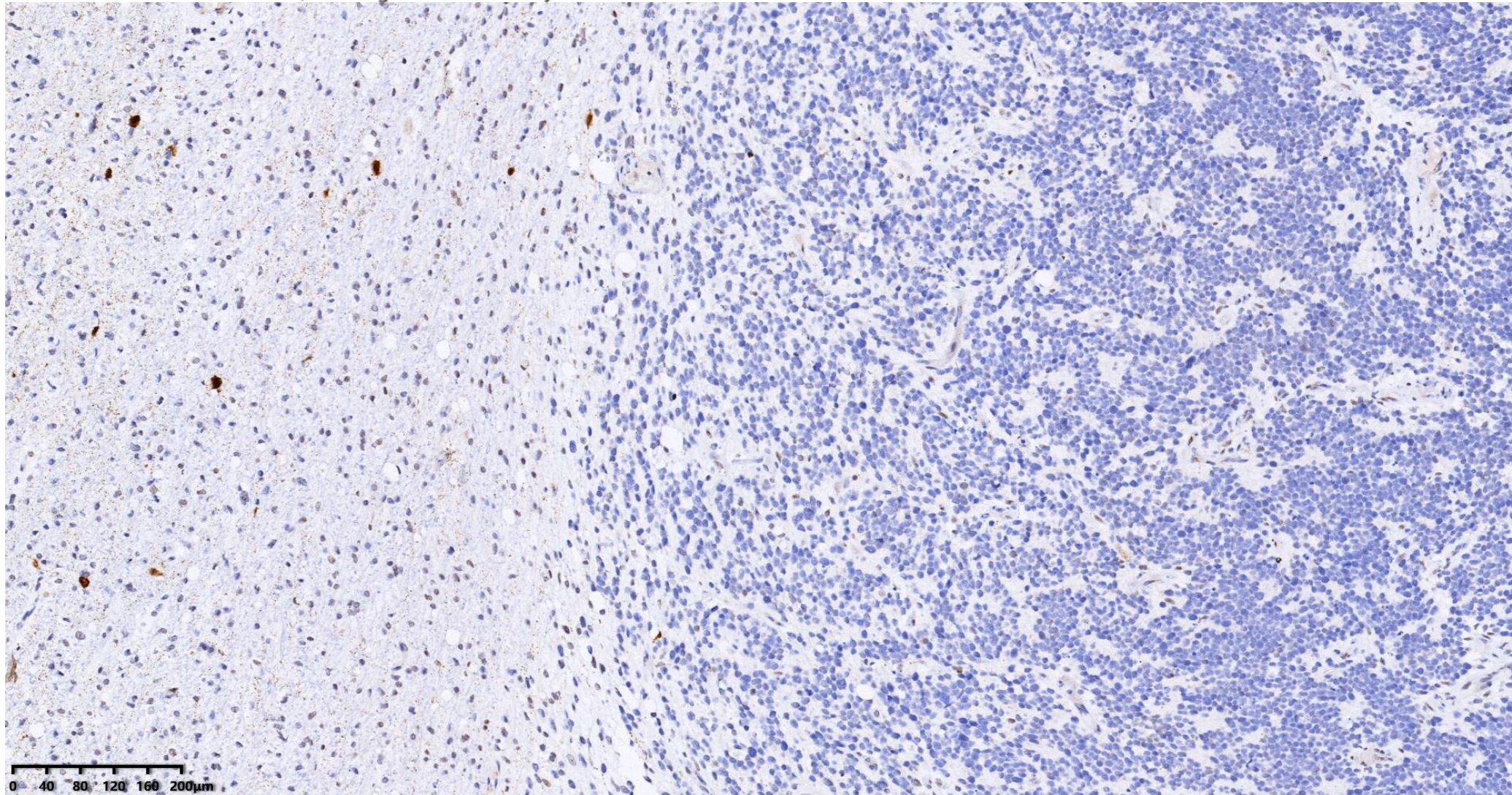
免疫组织化学-P53





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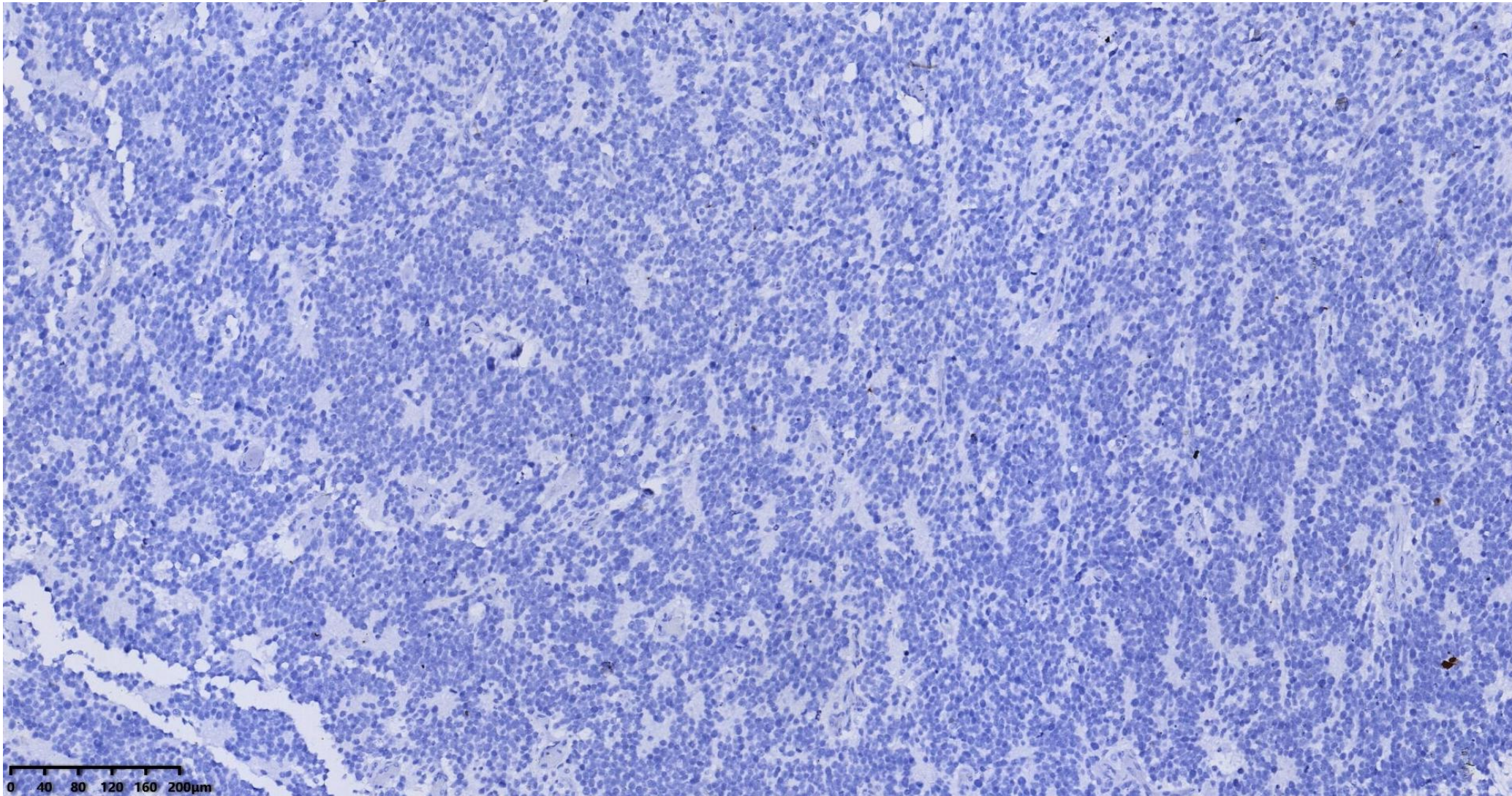
免疫组织化学-Neu-N





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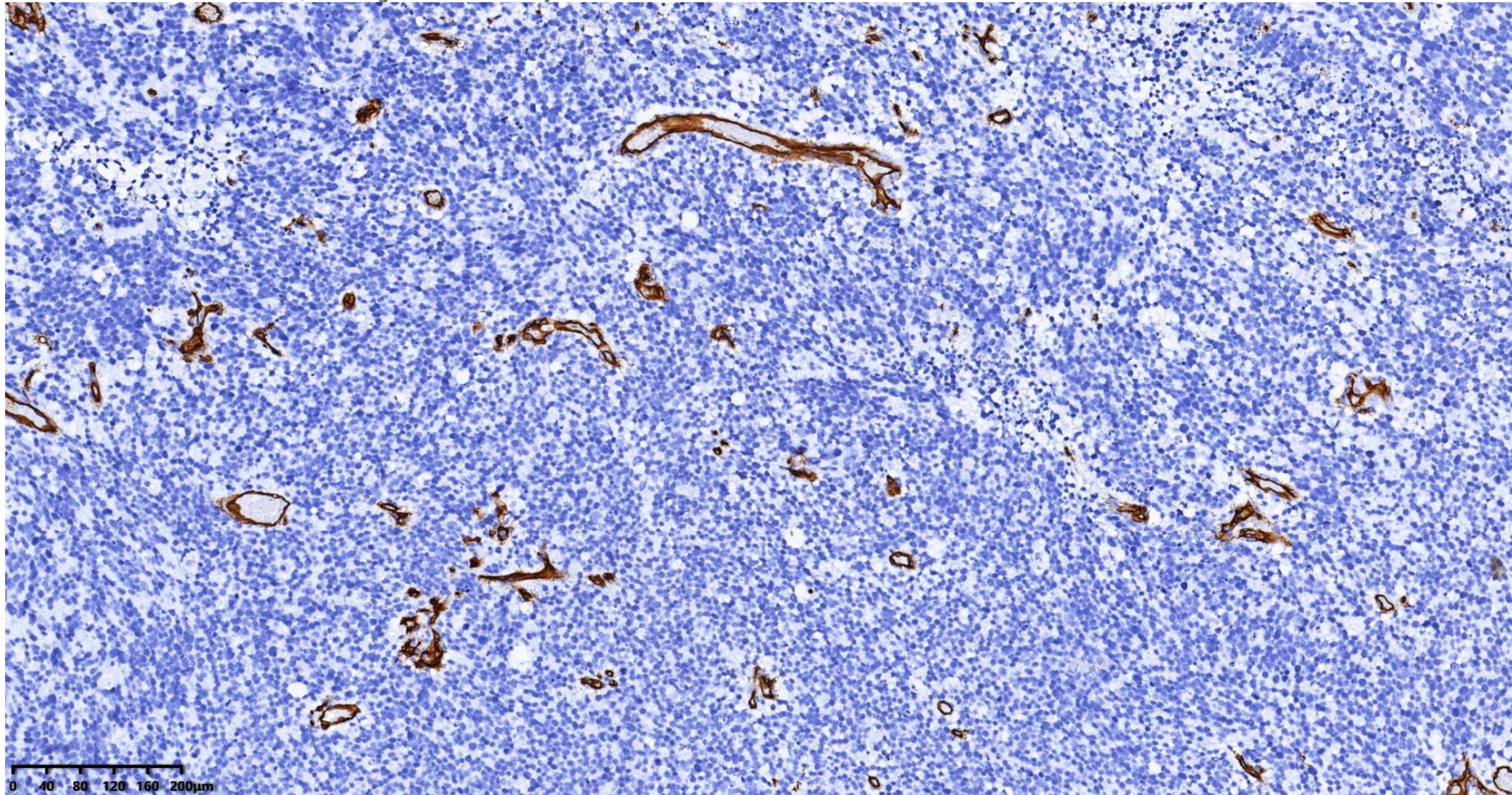
免疫组织化学-CK





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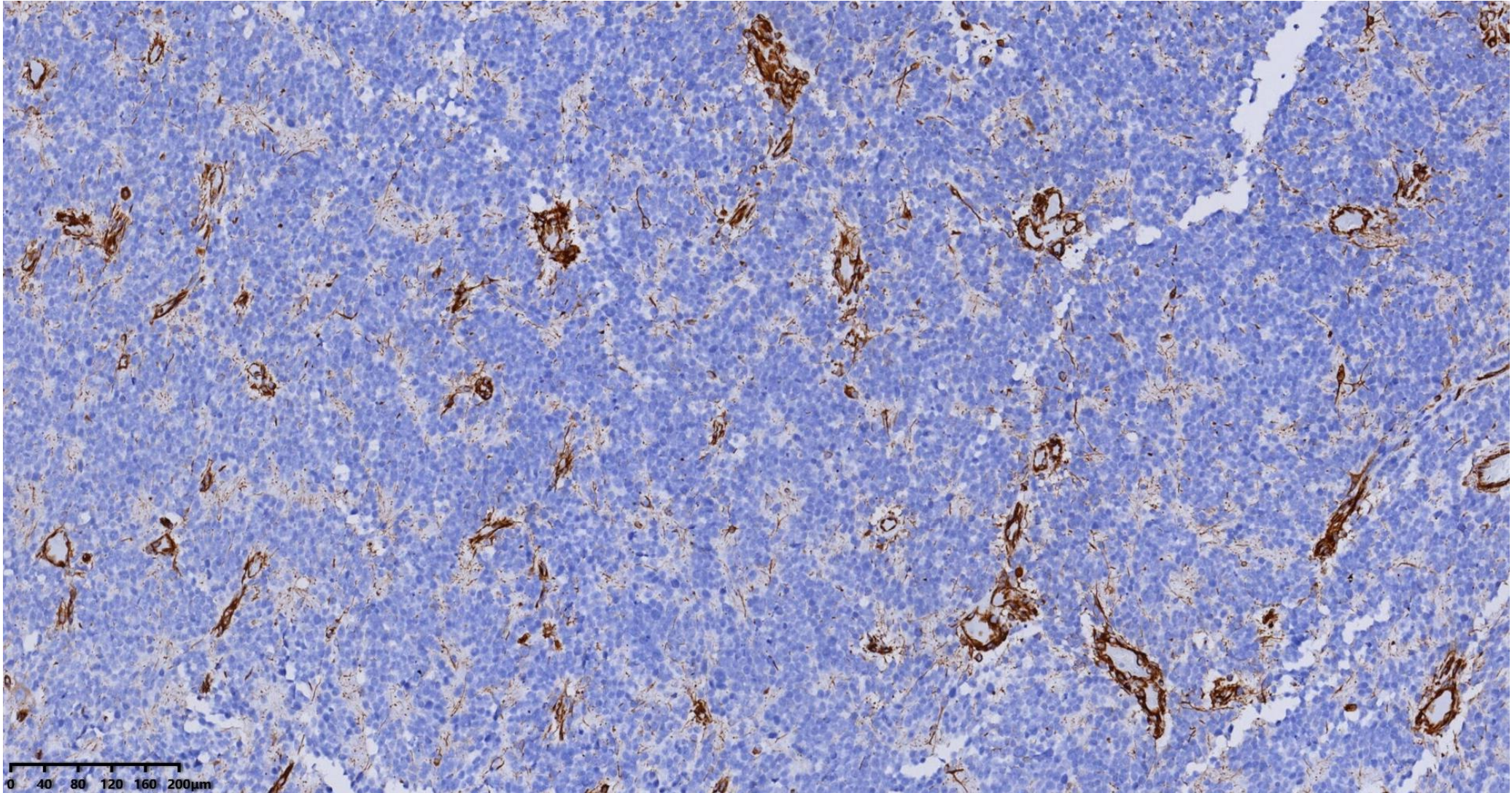
免疫组织化学-CD34





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免疫组织化学-Vimentin





小结

- 1.患者男性，47岁，主因“头痛5天”来神经外科就诊
- 2.送检标本：灰白色不整形组织两块，总体积为：6.0×5.0×3.5cm，切面灰白色、实性、质地嫩
- 3.光镜特点：肿瘤与周围脑组织边界清楚，肿瘤由缺乏分化特点的一致型细胞组成，肿瘤细胞中等大小，胞浆少，细胞核呈圆形、卵圆形，染色质浓染，核分裂象多见，可见地图状坏死，可形成菊形团，或流水样分布
- 4.免疫组化标记：Syn (+)，CD56 (+)，CD99 (+)，Ki-67 (约80%+)，IDH-1 (+)，P53 (+)



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病理诊断

- **(右额叶占位) 中枢神经系统胚胎性肿瘤, WHO IV 级, NOS**



构建分子时代中枢神经系统肿瘤诊断的理念

引入基因定义实体,调整弥漫性胶质瘤的分类

引入基因定义实体,调整髓母细胞瘤的分类

引入基因定义实体,调整其他胚胎性肿瘤的分类,删除了 PNET 术语

纳入基因定性的室管膜瘤亚型

新的鉴别儿科相似疾病的方法,包括新的命名方式和基因定性肿瘤

增加最新公认的肿瘤、亚型和模式

IDH 野生型、突变型胶质母细胞瘤(肿瘤)

弥漫中线胶质瘤, H3 K27M 突变型(肿瘤)

多层细胞菊形团的胚胎性肿瘤, C19MC 改变型(肿瘤)

室管膜瘤, RELA 融合-阳性(肿瘤)

弥漫软脑膜胶质神经肿瘤(肿瘤)

间变型多形性黄色星形细胞瘤(肿瘤)

上皮样胶质母细胞瘤(亚型)

胶质母细胞瘤并原始神经成分(模式)

神经节细胞肿瘤多结节并空泡(模式)

删除既往肿瘤、亚型和术语

大脑神经胶质瘤病(Gliomatosis cerebri)

原浆型、纤维性星形细胞瘤(亚型)

细胞性室管膜瘤(亚型)

原始神经外胚层瘤(primitive neuroectodermal tumor, PNET)(术语)

增加“脑部侵犯”为非典型性脑膜瘤的诊断标准之一

将“孤立性纤维瘤和血管外皮细胞瘤”调整为一种肿瘤,并建立配套的分级系统

扩展及阐明神经鞘瘤中的肿瘤类别,包括增加了混合性神经鞘瘤和将黑色素性施旺细胞瘤从其他类型施旺细胞瘤中分离出来

扩展 CNS 造血/淋巴来源肿瘤(淋巴瘤和组织细胞瘤)中的肿瘤类别





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Embryonal tumours	胚胎性肿瘤	
Medulloblastomas, genetically defined	髓母细胞瘤,遗传学分类	
Medulloblastomas, WNT-activated	髓母细胞瘤,WNT激活	9475/3*
Medulloblastoma, SHH-activated and TP-53-mutant	髓母细胞瘤,SHH激活伴TP53突变型	9476/3*
Medulloblastoma, SHH-activated and TP-53-wildtype	髓母细胞瘤,SHH激活伴TP53野生型	9471/3
Medulloblastoma, non-WNT/non-SHH	髓母细胞瘤,非WNT/非SHH	9477/3*
Medulloblastoma, group3	髓母细胞瘤,group 3	
Medulloblastoma, group4	髓母细胞瘤,group 4	
Medulloblastomas,histologically defined	髓母细胞瘤,组织学分类	
Medulloblastoma, classic	髓母细胞瘤,经典型	9470/3
Medulloblastoma, desmoplastic/nodular	髓母细胞瘤,多纤维性/结节增生	9471/3
Medulloblastoma with extensive nodularity	髓母细胞瘤伴广泛小结节型	9471/3
Medulloblastoma,large cell/anaplastic	髓母细胞瘤,大细胞型/间变型	9474/3
Medulloblastoma,NOS	髓母细胞瘤,NOS	9470/3
Embryonal tumor with multilayered rosettes,C19MC-altered	胚胎性肿瘤伴多层菊形团,C19MC变异	9478/3*
Embryonal tumor with multilayered rosettes,NOS	胚胎性肿瘤伴多层菊形团,NOS	9478/3
Medulloepithelioma	髓上皮瘤	9501/3
CNS neuroblastoma	中枢神经系统神经母细胞瘤	9500/3
CNS ganglioneuroblastoma	中枢神经系统节细胞神经母细胞瘤	9490/3
CNS Embryonal tumour,NOS	中枢神经系统胚胎性肿瘤,NOS	9473/3
Atypical teratoid/rhabdoid tumour	非典型畸胎样/横纹肌样肿瘤(AT/RT)	9508/3
CNS embryonal tumor with rhabdoid tumour	中枢神经系统胚胎性肿瘤伴横纹肌样特征	9508/3
Tumours of the cranial and paraspinal nerves	颅内和椎旁神经肿瘤	
Schwannoma	施旺细胞瘤	9560/0
Cellular schwannoma	细胞型施旺细胞瘤	9560/0
Plexiform schwannoma	丛状型施旺细胞瘤	9560/0
Melanotic schwannoma	黑色素型施旺细胞瘤	9560/1
Neurofibroma	神经纤维瘤	9540/0
Atypical Neurofibroma	不典型神经纤维瘤	9540/0
Plexiform Neurofibroma	丛状型神经纤维瘤	9550/0
Perineurioma	神经束膜瘤	9571/0
Hybrid nerve sheath tumours	混合型神经鞘肿瘤	
Malignant peripheral nerve sheath tumour(MPNST)	恶性周围神经鞘瘤(MPNST)	9540/3
Epithelioid MPNST	上皮样 MPNST	9540/3
MPNST with perineurial differentiation	MPNST 伴神经束膜分化	9540/3
Meningiomas	脑膜瘤	
Meningioma	脑膜瘤	9530/0
Meningothelial meningioma	脑膜上皮型脑膜瘤	9531/0
Fibrous meningioma	纤维型脑膜瘤	9532/0
Transitional meningioma	过渡型脑膜瘤	9537/0
Psammomatous meningioma	砂粒型脑膜瘤	9533/0
Angiomatous meningioma	血管瘤型脑膜瘤	9534/0
Microcystic meningioma	微囊型脑膜瘤	9530/0
Secretory meningioma	分泌型脑膜瘤	9530/0
Lymphoplasmacyte-rich meningioma	淋巴细胞丰富型脑膜瘤	9530/0
Metaplastic meningioma	化生型脑膜瘤	9530/0
Chordoid meningioma	脊索样型脑膜瘤	9538/1
Clear cell meningioma	透明细胞型脑膜瘤	9538/1
Atypical meningioma	非典型性脑膜瘤	9539/1
Papillary meningioma	乳头型脑膜瘤	9538/3
Rhabdoid meningioma	横纹肌样型脑膜瘤	9538/3
Anaplastic/malignant meningioma	间变性/恶性脑膜瘤	9530/3
Mesenchymal, non-meningothelial tumours	间质,非脑膜上皮性肿瘤	
Solitary fibrous tumour/haemangiopericytoma**	孤立性纤维性肿瘤/血管外皮细胞瘤**	
Grade 1	1级	8815/0
Grade 2	2级	8815/1
Grade 3	3级	8815/3
Haemangioblastoma	血管母细胞瘤	9161/1
Haemangioma	血管瘤	9120/0
Epithelioid haemangiioendothelioma	上皮样血管内皮细胞瘤	9133/3
Angiosarcoma	血管肉瘤	9120/3
Kaposi sarcoma	卡波西肉瘤	9140/3
Ewing sarcoma/PNET	尤文氏肉瘤/原始神经外胚层肿瘤	9364/3
Lipoma	脂肪瘤	8850/0
Angiolipoma	血管脂肪瘤	8861/0
Hibernoma	蛰伏脂肪瘤(冬眠瘤)	8880/0

→ 相当于2012版WHO: 幕上原发性原始神经外胚层肿瘤/PNET



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- **组织起源存在争议，已达成共识的是起源于中枢神经系统原始神经上皮细胞**
- **定义：发生于大脑或幕上的胚胎性肿瘤，由未分化的或分化差的神经上皮细胞构成。这些细胞具有向神经元、星形细胞、室管膜细胞、肌肉、黑色素细胞方向分化的能力**
- **ICD-0编码：9473/3**
- **组织病理学分级：WHO IV 级**



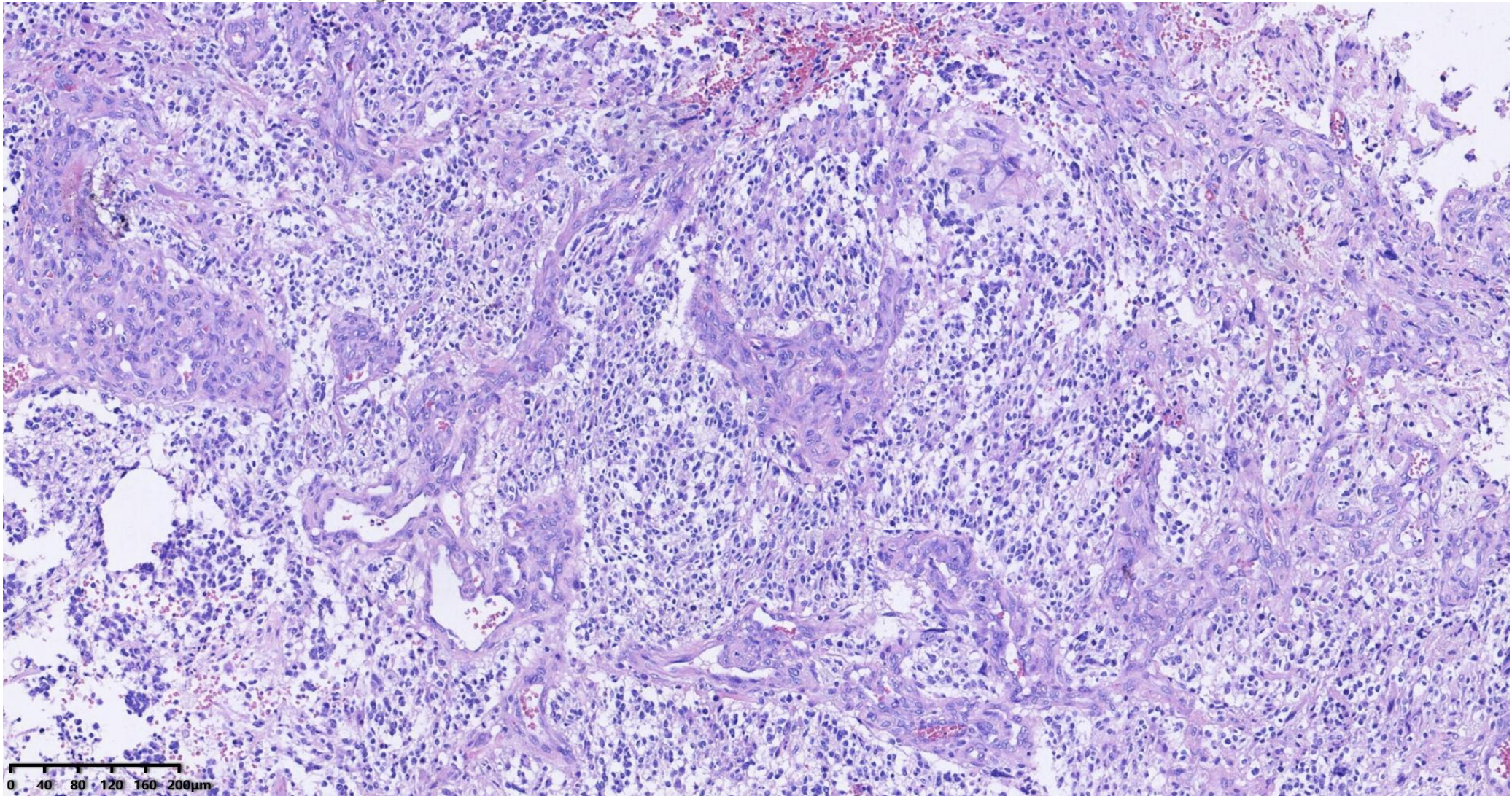
临床特点

- 发病率低，仅占整脑肿瘤的0.1%左右，儿童多见，男女比例2:1，
成人幕上肿瘤非常罕见
- 部位：幕上大脑和鞍上
- 临床症状：可引起颅内压增高（头痛、呕吐）、癫痫发作、意识不清、肢体运动障碍；鞍上肿瘤可引起视力、视野障碍或内分泌障碍；婴幼儿可引起巨颅
- 影像学：等密度或高密度影，增强后可强化。一般为实性病灶，边缘清晰，肿块体积常较大，占位效应明显，出现囊性变和坏死



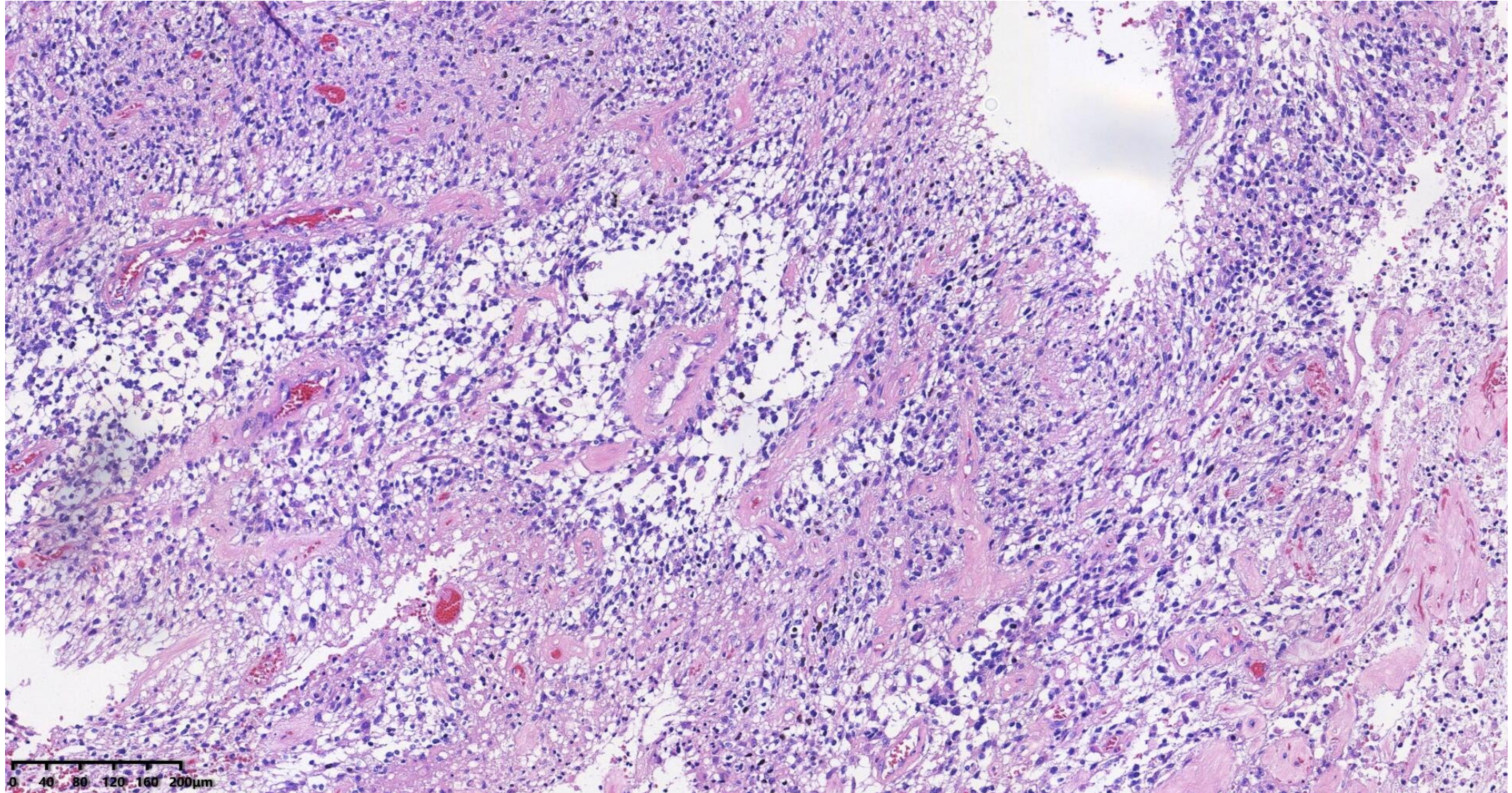
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鉴别诊断-胶质母细胞瘤



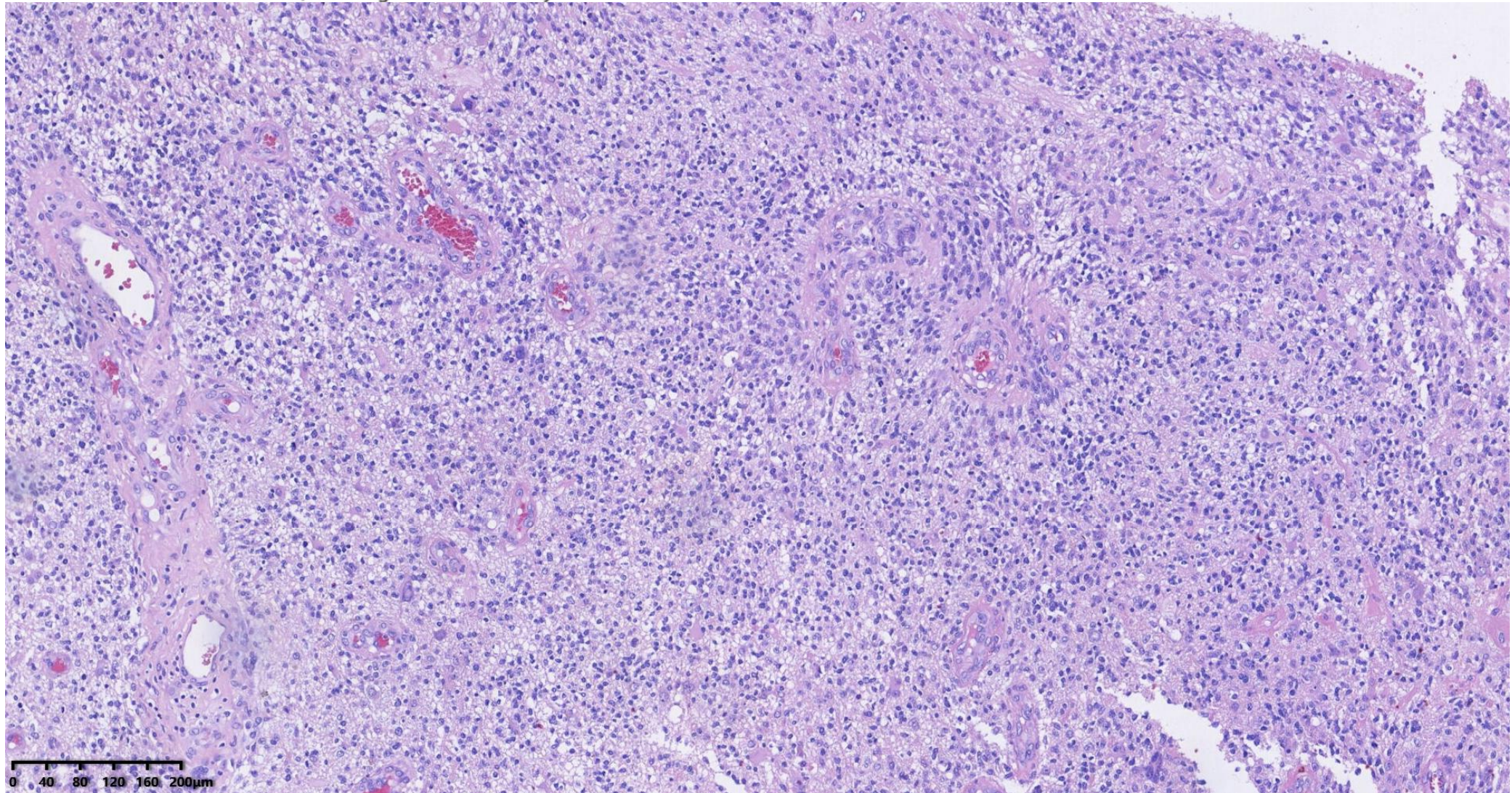


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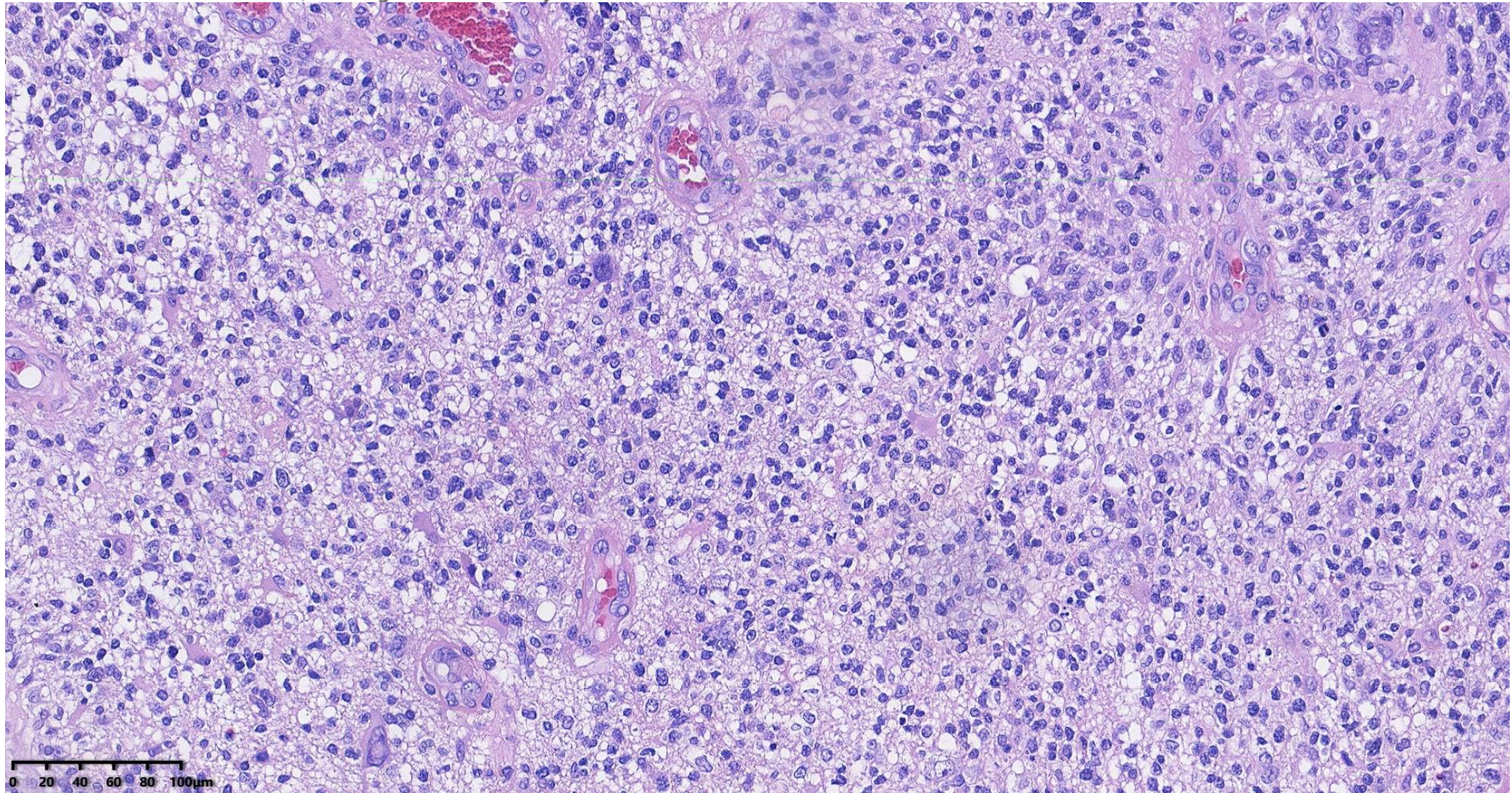


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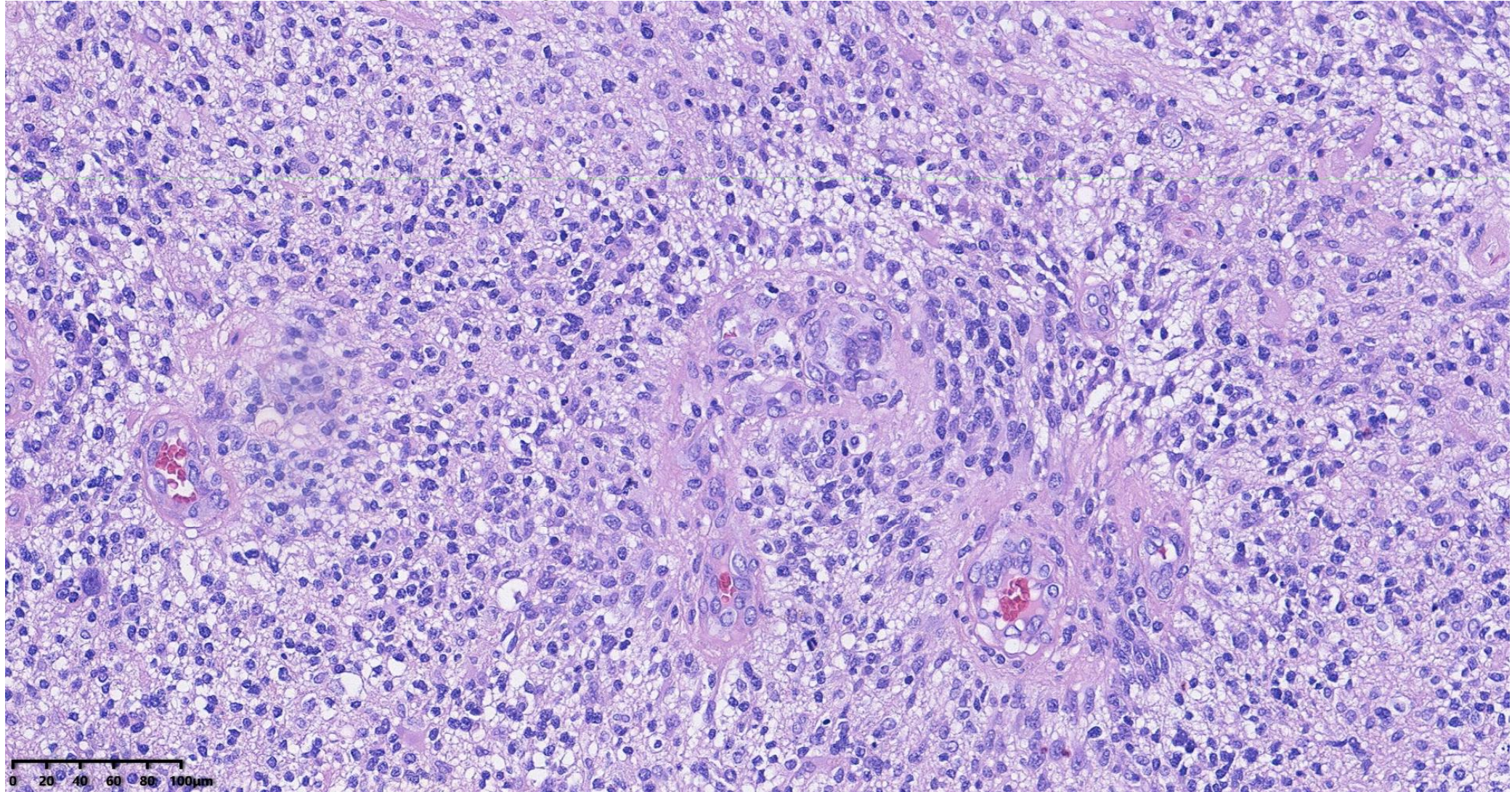


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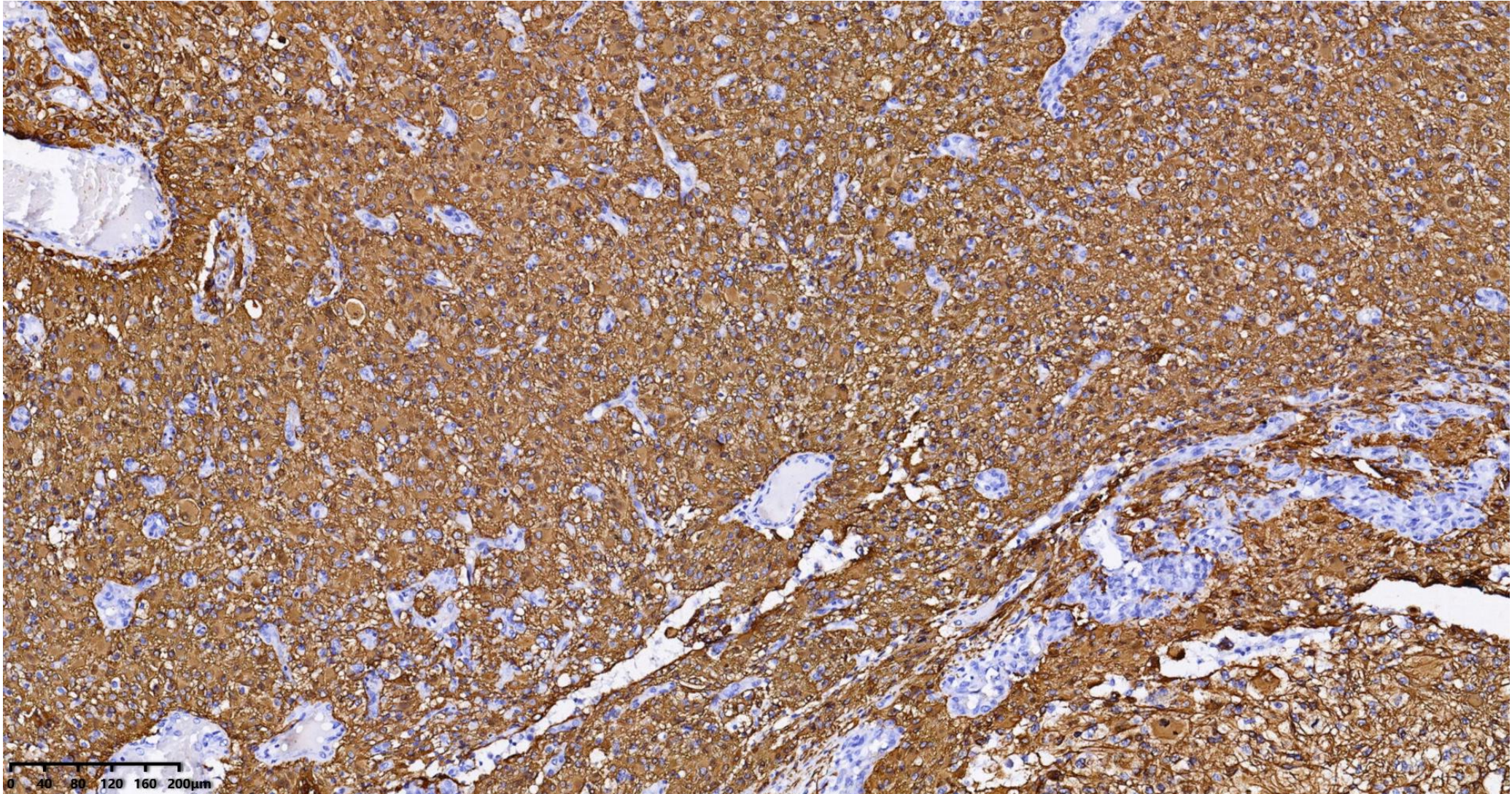
胶质瘤病理诊断免疫组化蛋白标志物

- **GFAP** 星形细胞瘤、室管膜起源肿瘤、胶质母细胞瘤等均表达
GFAP
- 细胞定位：细胞浆和突起
- 用于与其他非胶质源性肿瘤进行鉴别



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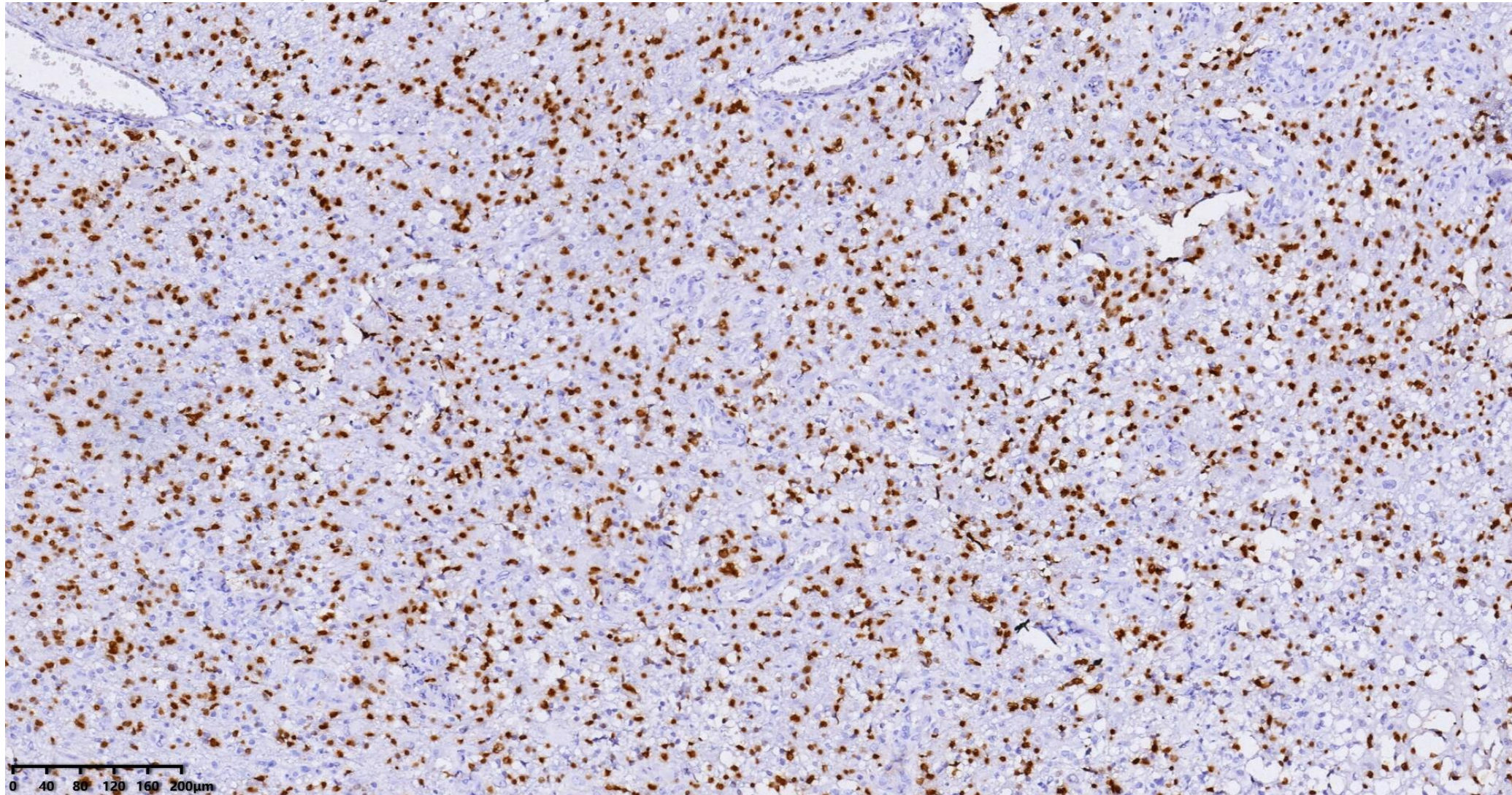
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- **Olig-2** 几乎所有少突胶质细胞瘤、多数星形细胞起源肿瘤及胶质母细胞瘤等表达**Olig-2**
- 细胞定位：细胞核
- 用于与其他非胶质源性肿瘤进行鉴别



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免疫组织化学-Olig-2





免疫组织化学的意义-协助确定肿瘤分期

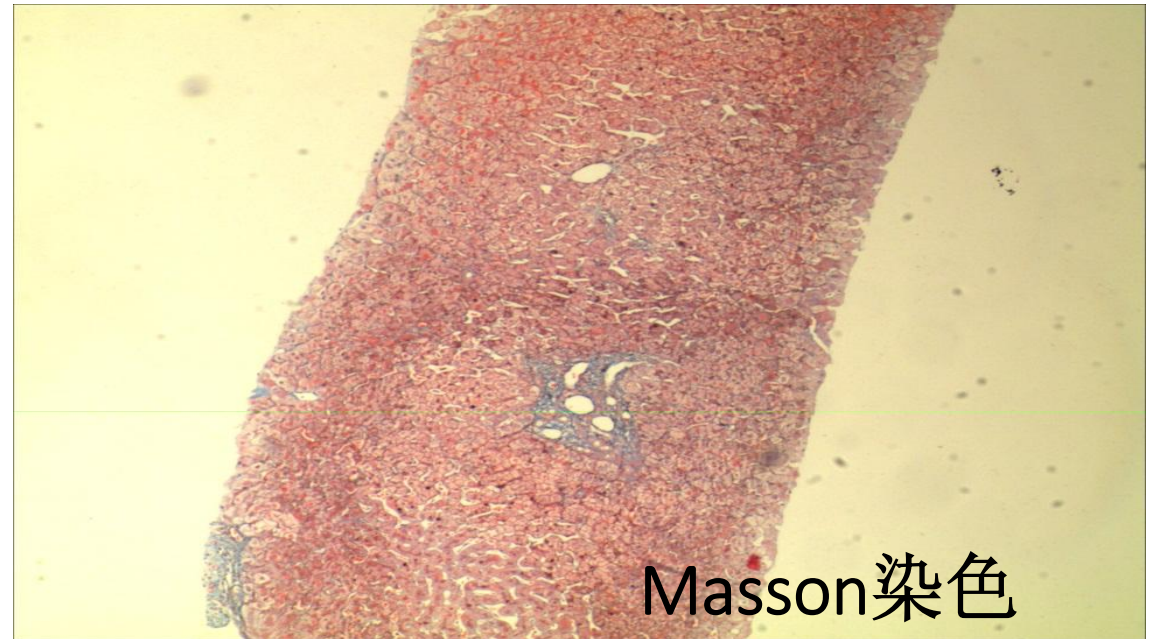
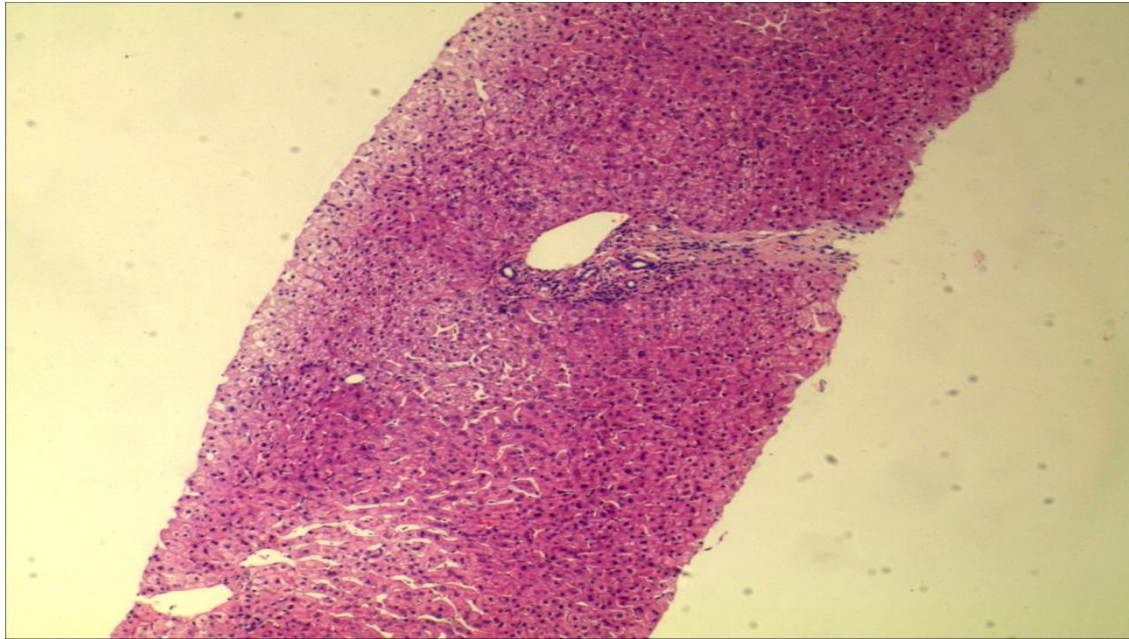
- 肿瘤相关抗原有利于临床病理诊断和鉴别诊断，常用的有 AFP、CEA、CA153、CA125、CA19-9
- 肿瘤是原位或浸润性癌（如乳腺癌CK5/6, p63、SMMHC）
- 肿瘤有无血管浸润（CD34）、有无淋巴管浸润（D2-40）
- 肿瘤有无神经侵犯（S-100）
- 与肿瘤分期密切相关的层粘连蛋白-laminin、胶原抗体collagen可显示基底膜受损破坏情况



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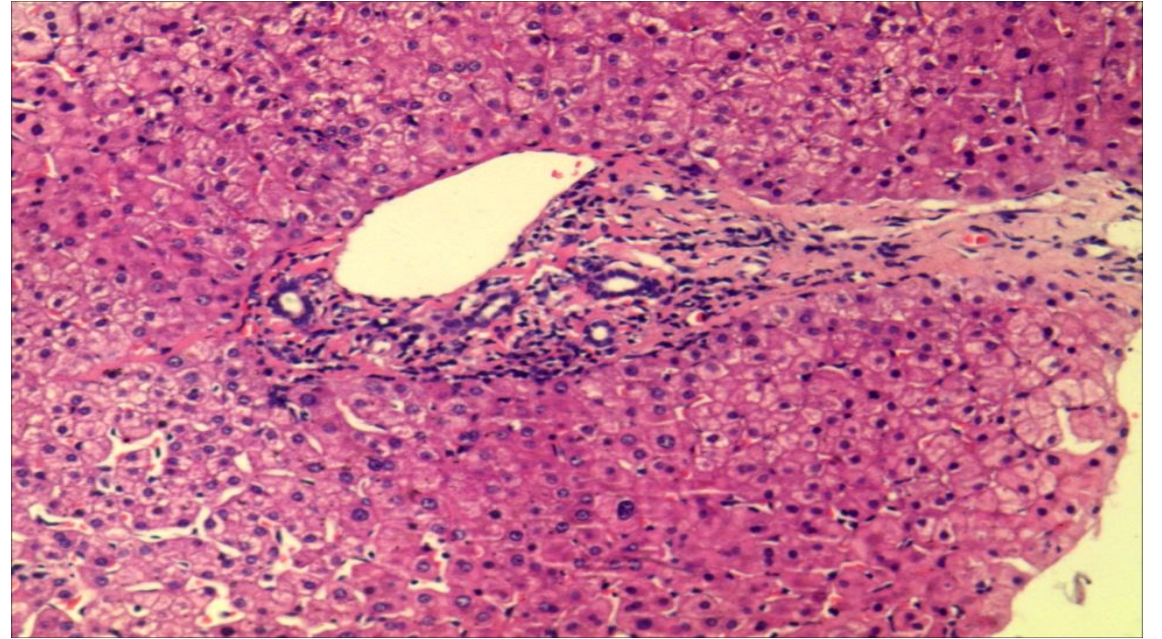
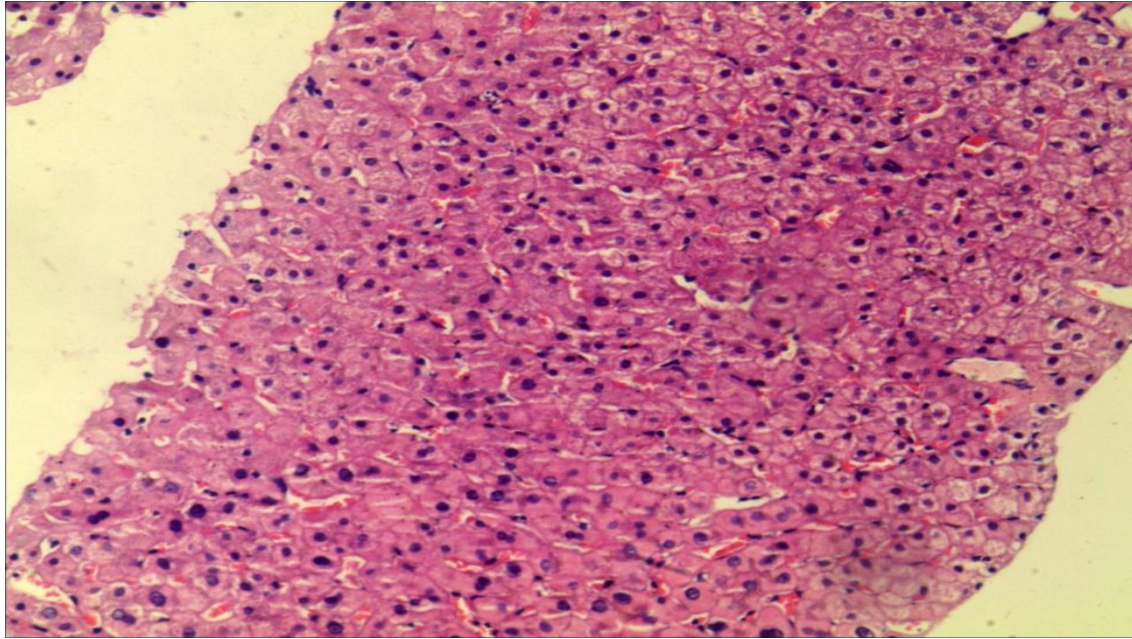
免疫组织化学的意义-诊断感染性疾病 病例11

男性，43岁，临床诊断：病毒性肝炎





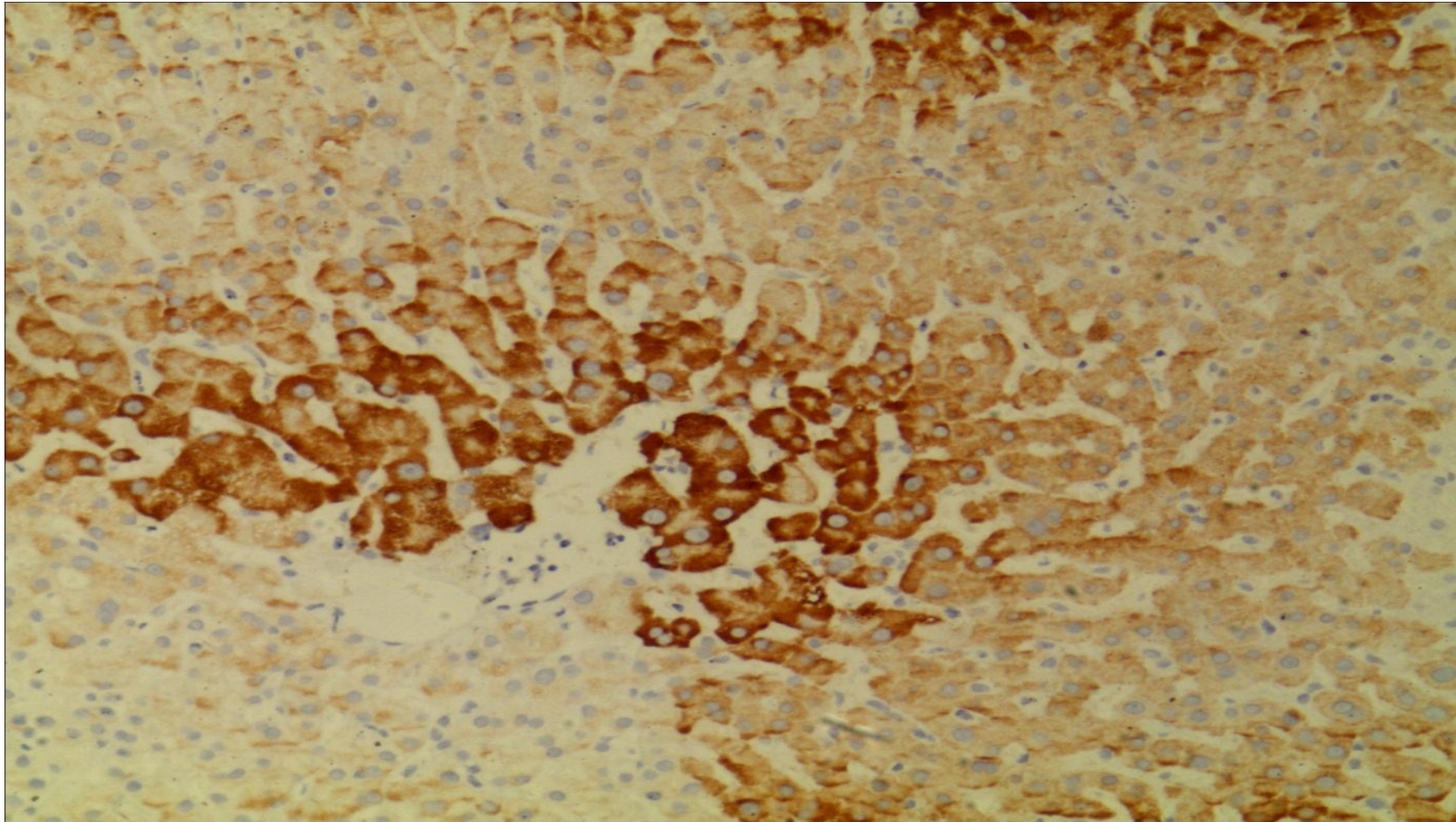
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HBsAg





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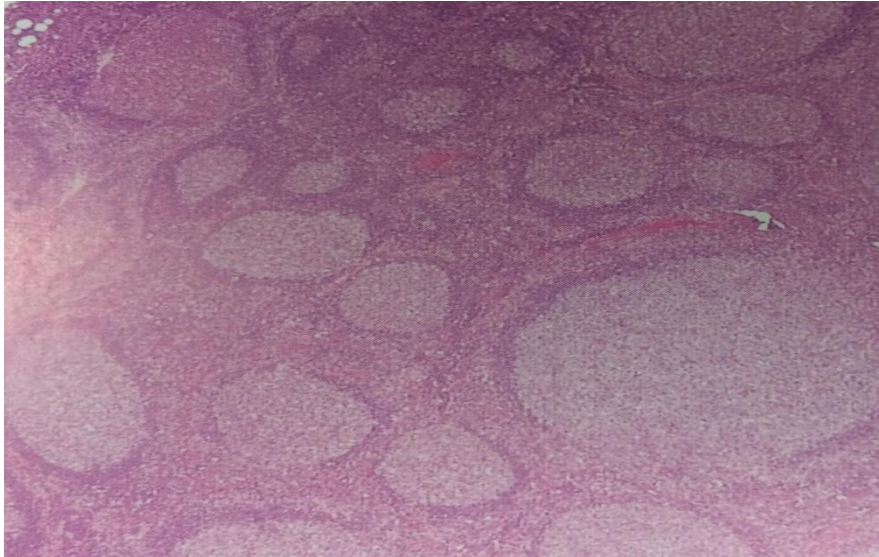
病理诊断

- **（肝脏穿刺活检标本）病毒性肝炎，乙型，慢性，轻度，G1S0。**



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确定转移灶来源



肺 : TTF-1、CK7、Napsin-A

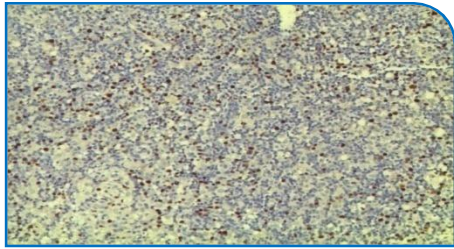
胃肠 : CK20、CDx-2、Villin

鳞状上皮 : CK5/6、P63、P40

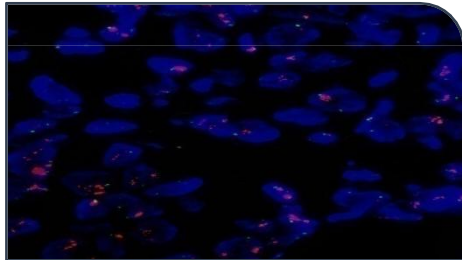


🏠 分子病理检测相关技术

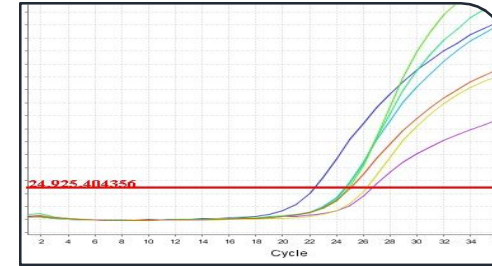
原位杂交技术
(CISH)



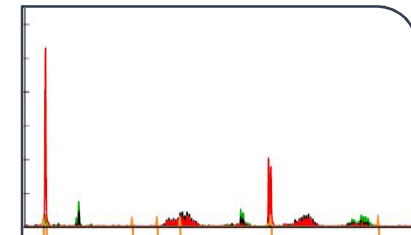
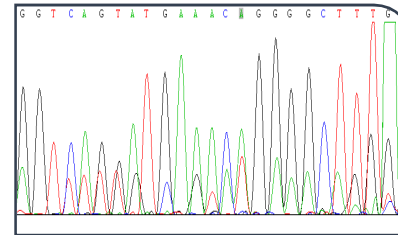
荧光原位杂交技术
(FISH)



荧光定量PCR技术
(qPCR)



测序&PCR基因扫描技术
(Sequence & PCR-Genescan)





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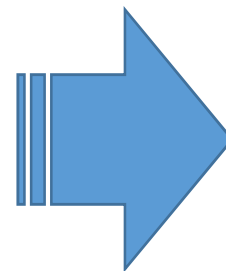
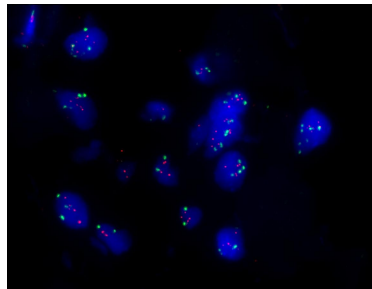
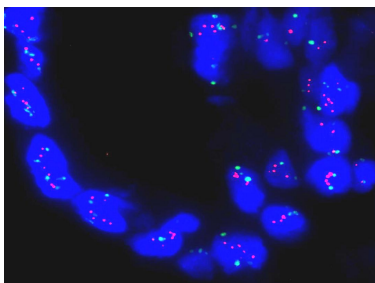
The Department of Pathology of First affiliated Hospital of Kunming Medical University

HER2 (CerbB2) 基因 FISH 检测结果

编号: MF10-

姓名: 性别: 女 年龄: 住院号: 000

科室: 床号: 病理号: 标本部位:



赫赛汀
治疗

Her-2基因 (2+)

结果:

计数的肿瘤细胞量:

HER2 信号数平均值/细胞核=

CEP17 信号数平均值/细胞核=

平均 HER2 信号数/平均 CEP17 信号数的比值=

结论:

备注: 无扩增: HER2/CEP17 比值<1.8

不确定: HER2/CEP17 比值 1.8-2.2

扩增: HER2/CEP17 比值>2.2

医师签名:

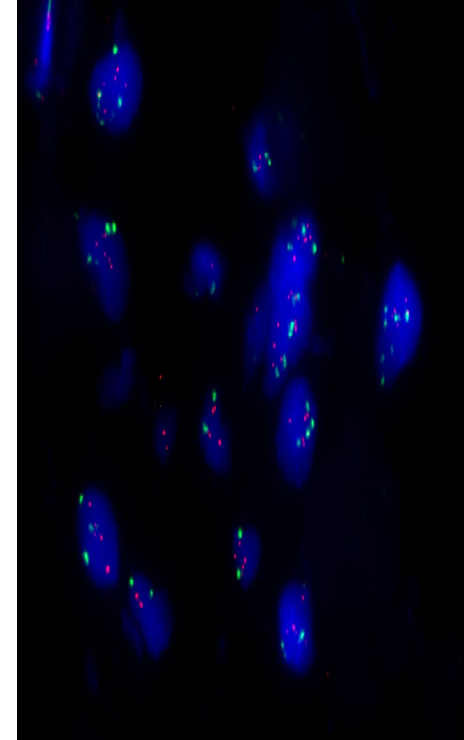
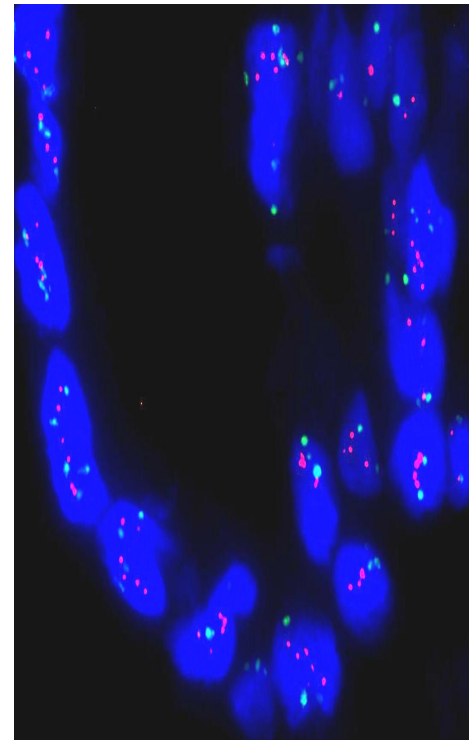
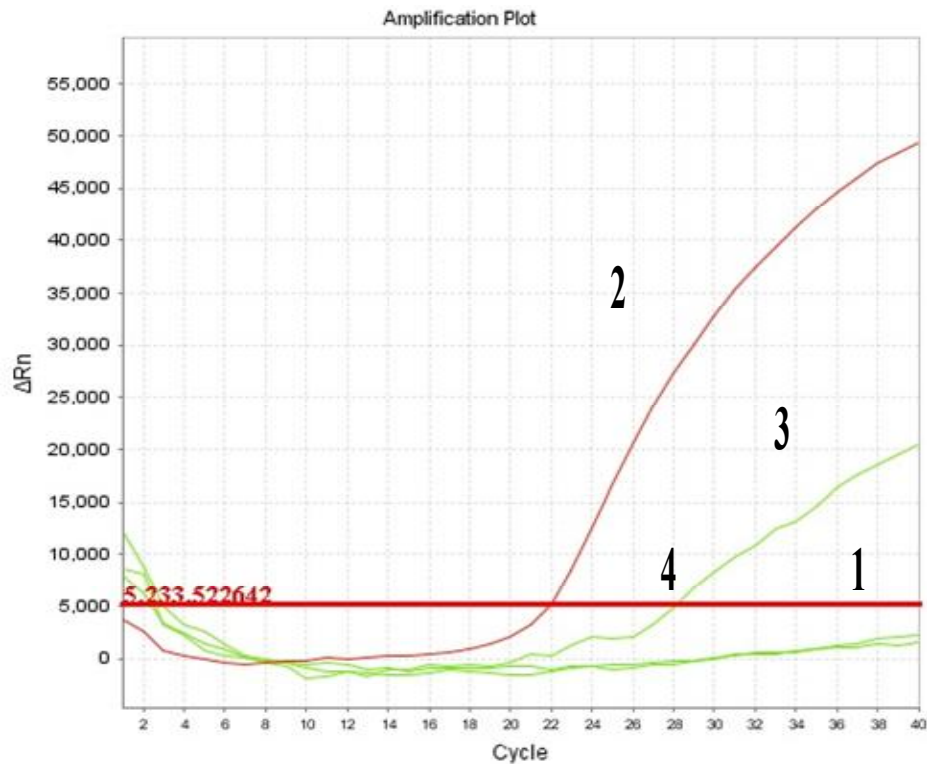
报告日期:

此报告仅反映送检标本的情况



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肺腺癌---EGFR、ROS-1、AKL





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Contents

1

免疫组织化学技术概述

2

免疫组织化学技术作用和意义-病例分享

3

如何获得满意的免疫组化结果



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如何获得满意的免疫组织化学结果

- 送检标本量
- 送检标本质量
- 冻后标本不宜IHC
- 福尔马林及时、充分固定
- 病理诊断医师按照标准判读IHC结果



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谢谢聆听
Thank you for your attention

