

# **CASE REPORT**

## **« TWO TUMORS, ONE DOG »**

### **SFAPV – 2015**

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**Jean-Charles HUSSON**

**DESV-APV – ECVP 2<sup>nd</sup> year trainee**

**Ecole Nationale Vétérinaire d'Alfort**

# HISTORY - CLINICAL EXAMINATION

- POUPETTE, 12 years old
- Neutered female Wirehaired Dachshund
- Presented to the ECU of ENVA
- Weakness, dysorexia, polypnea, abdominal dilation

# DIAGNOSTIC IMAGING

- **RADIOGRAPHY**

- Thorax : no abnormality
- Abdomen : marked hepatomegaly

- **ULTRASOUND**

- Liver : marked hepatomegaly
- Spleen : marked splenomegaly with one large mass
- Adrenal glands : right  $\approx$  2 cm with caudal vena cava invasion, left one slightly increased

# CLINICAL CONCLUSION

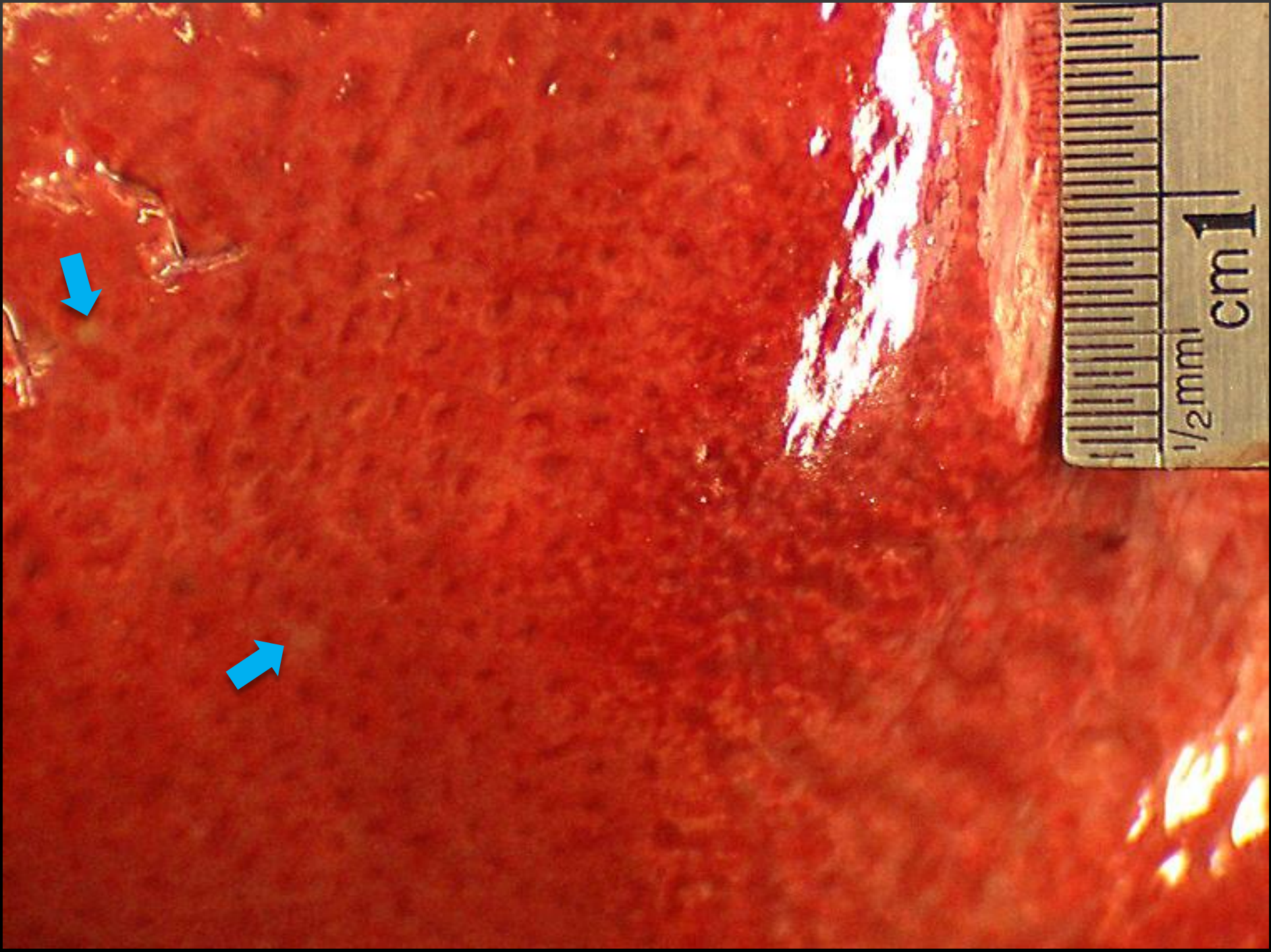
- Hepatic, splenic and adrenal enlargement
- Strongly suggestive of malignancies
- No other complementary tests
- Euthanasia decided by owners

# NECROPSY

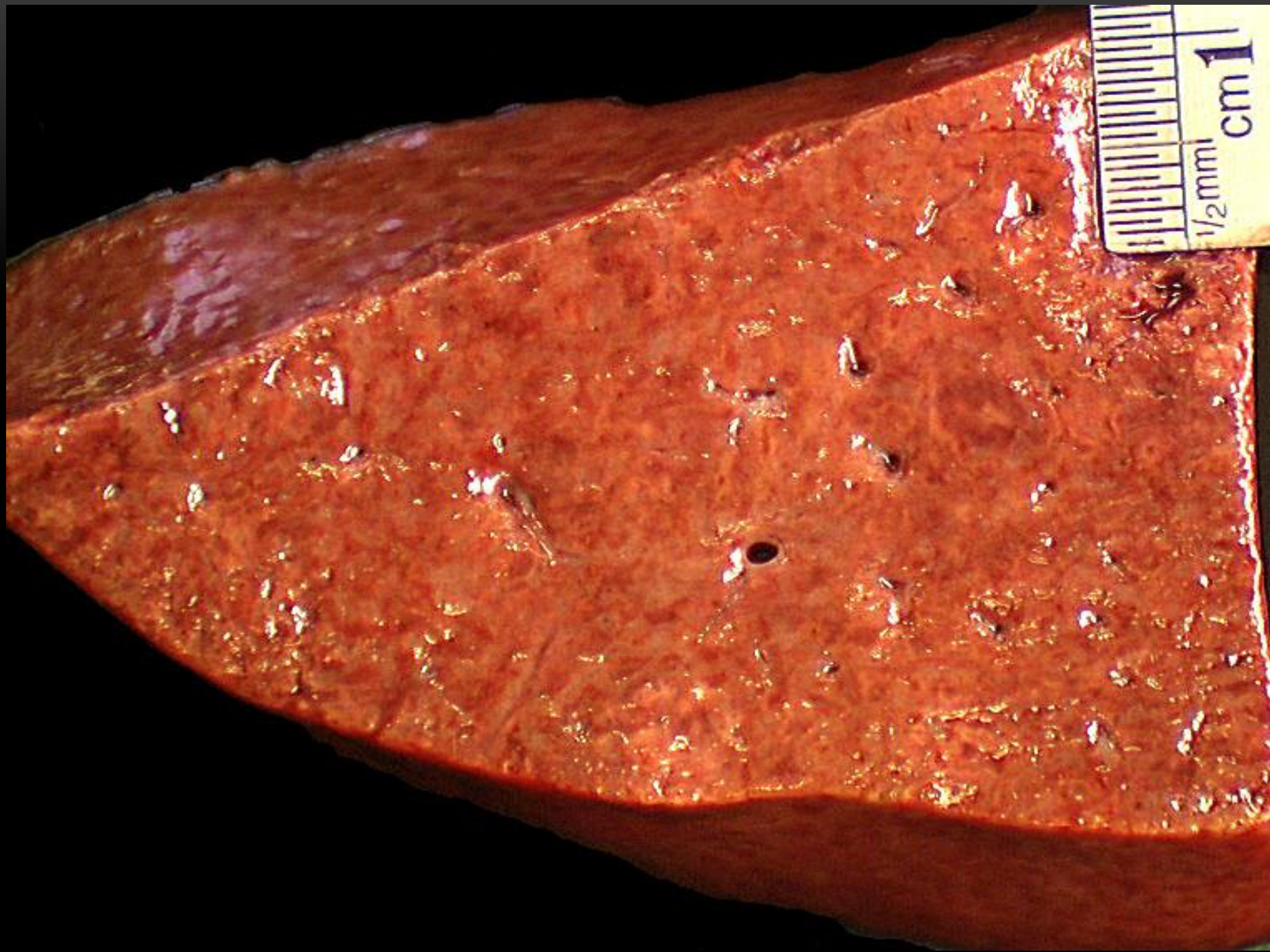
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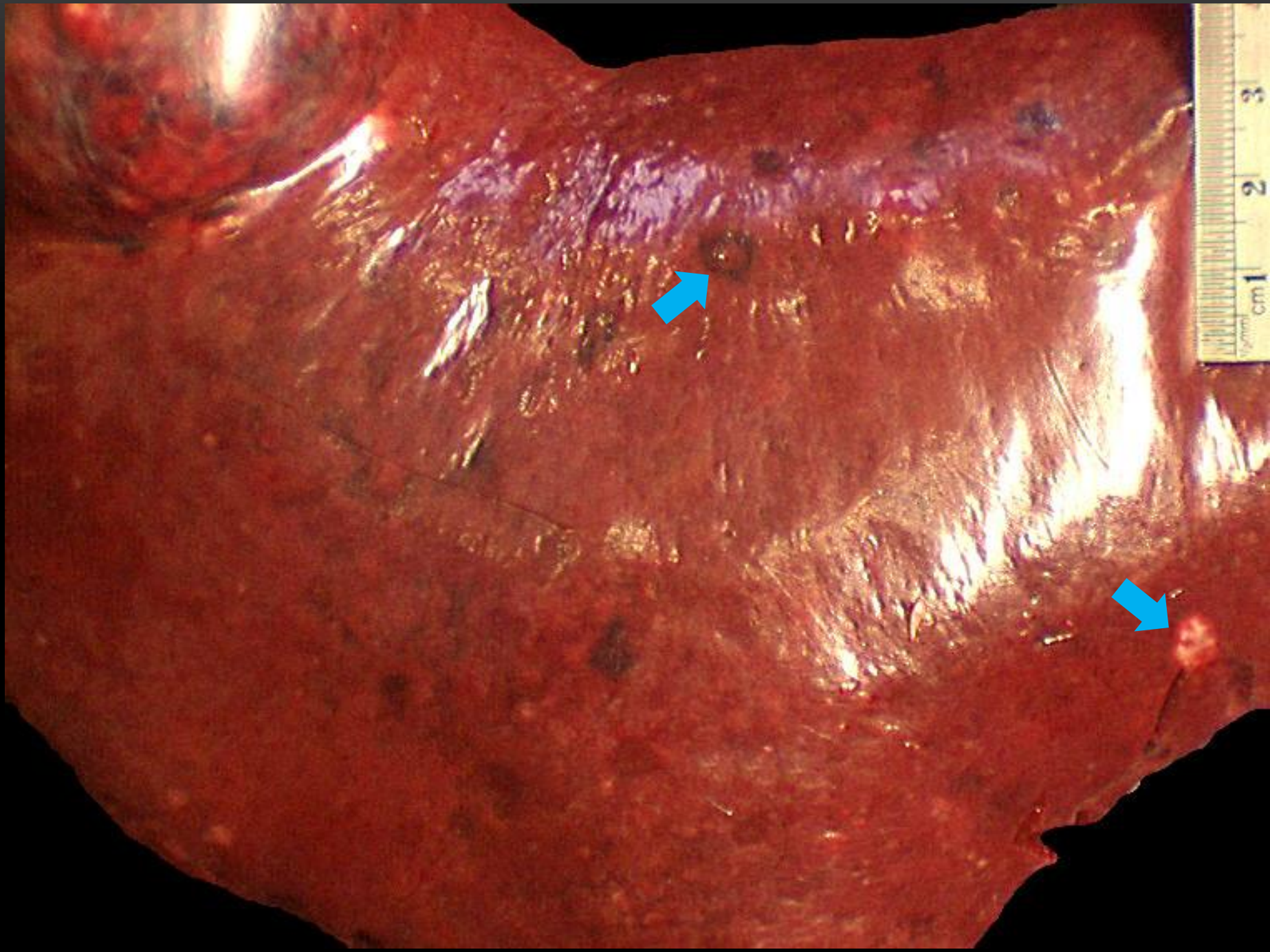




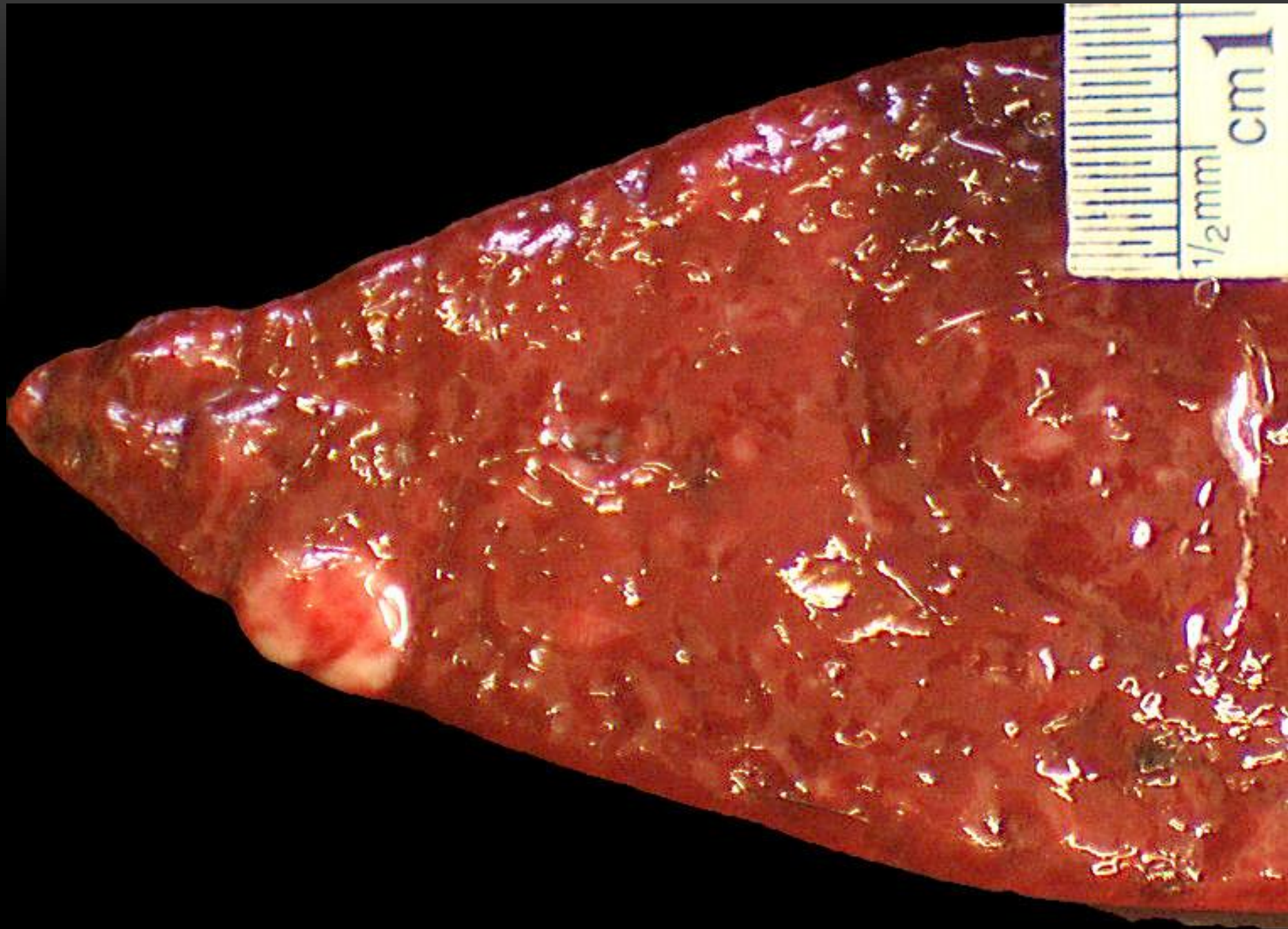




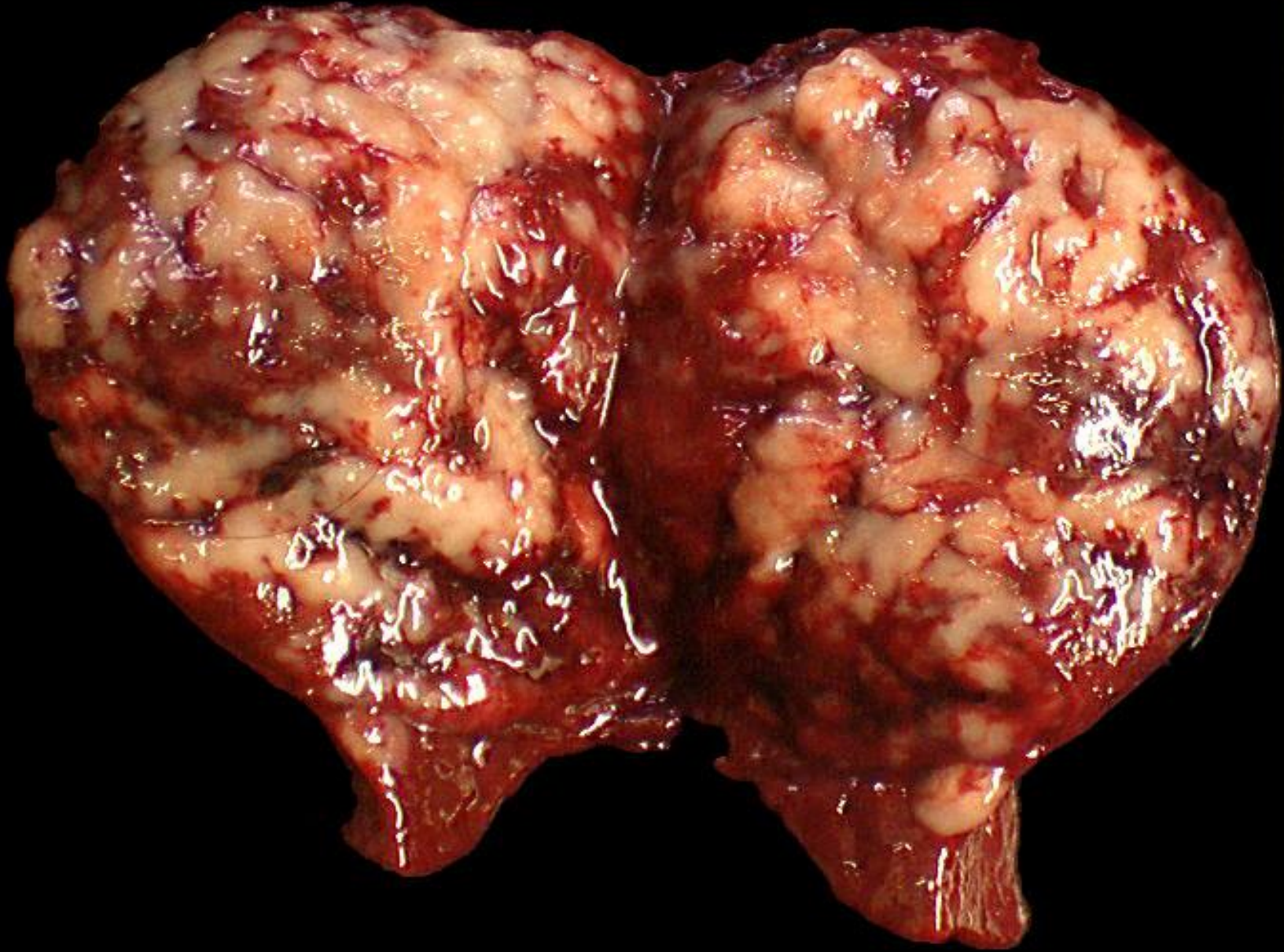




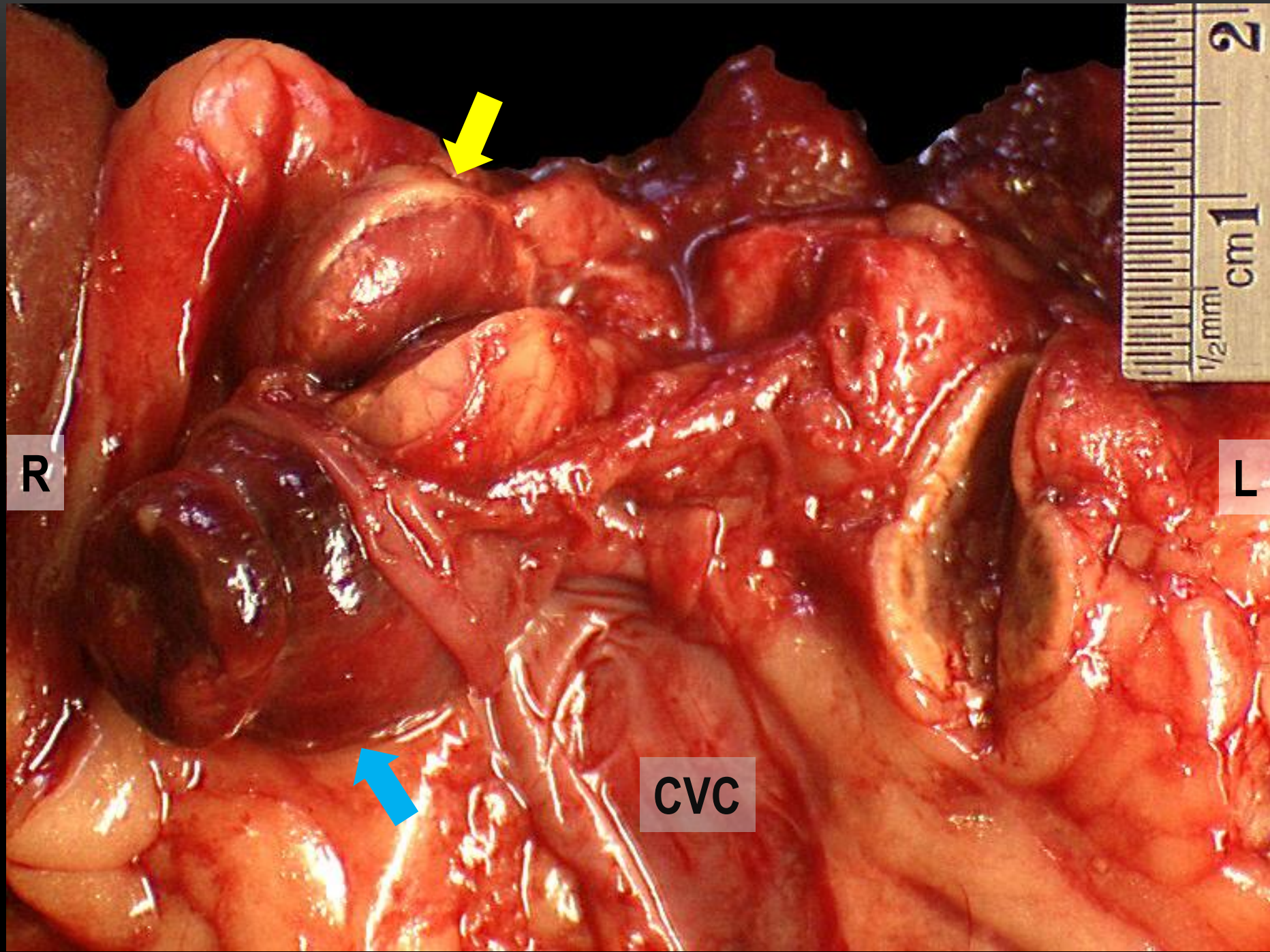












R

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CVC

# NECROPSY CONCLUSION

- **LIVER** : hepatomegaly, diffuse, marked with increased lobular pattern, with white foci and diffuse pale color
- **SPLEEN** : splenomegaly, diffuse, marked with white foci and diffuse pale color + *4 cm nodule, soft, red to white*
- First hypothesis : **lymphoma** (and *splenoma*)
- **RIGHT ADRENAL GLAND** : 2 cm tan mass apparently from center of the gland with invasion of the caudal vena cava
- First hypothesis : **pheochromocytoma**

# MICROSCOPIC EXAMINATION

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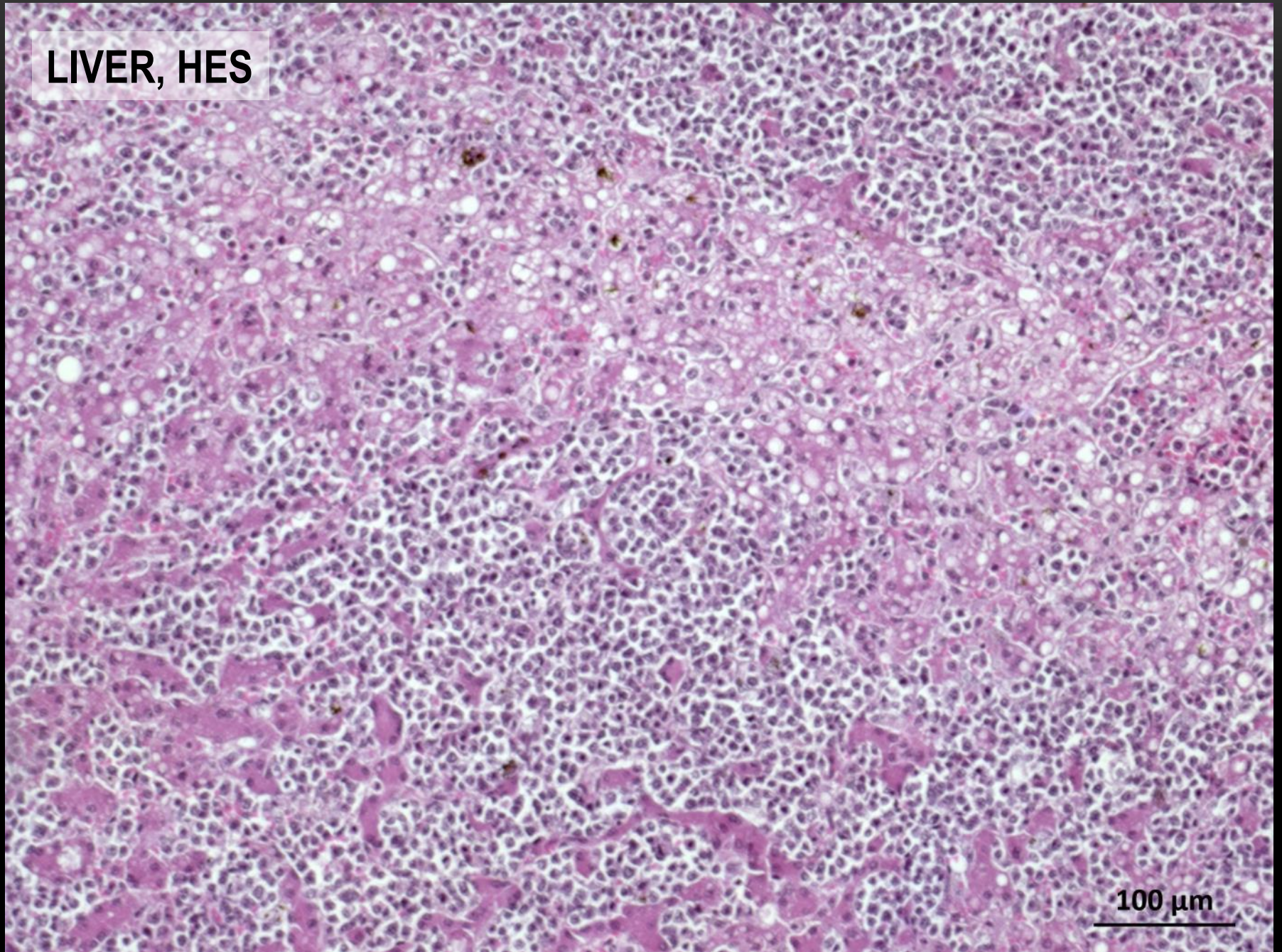
**Hematoxylin Eosin Safran**

**Special colorations**

**Immunohistochemistry**



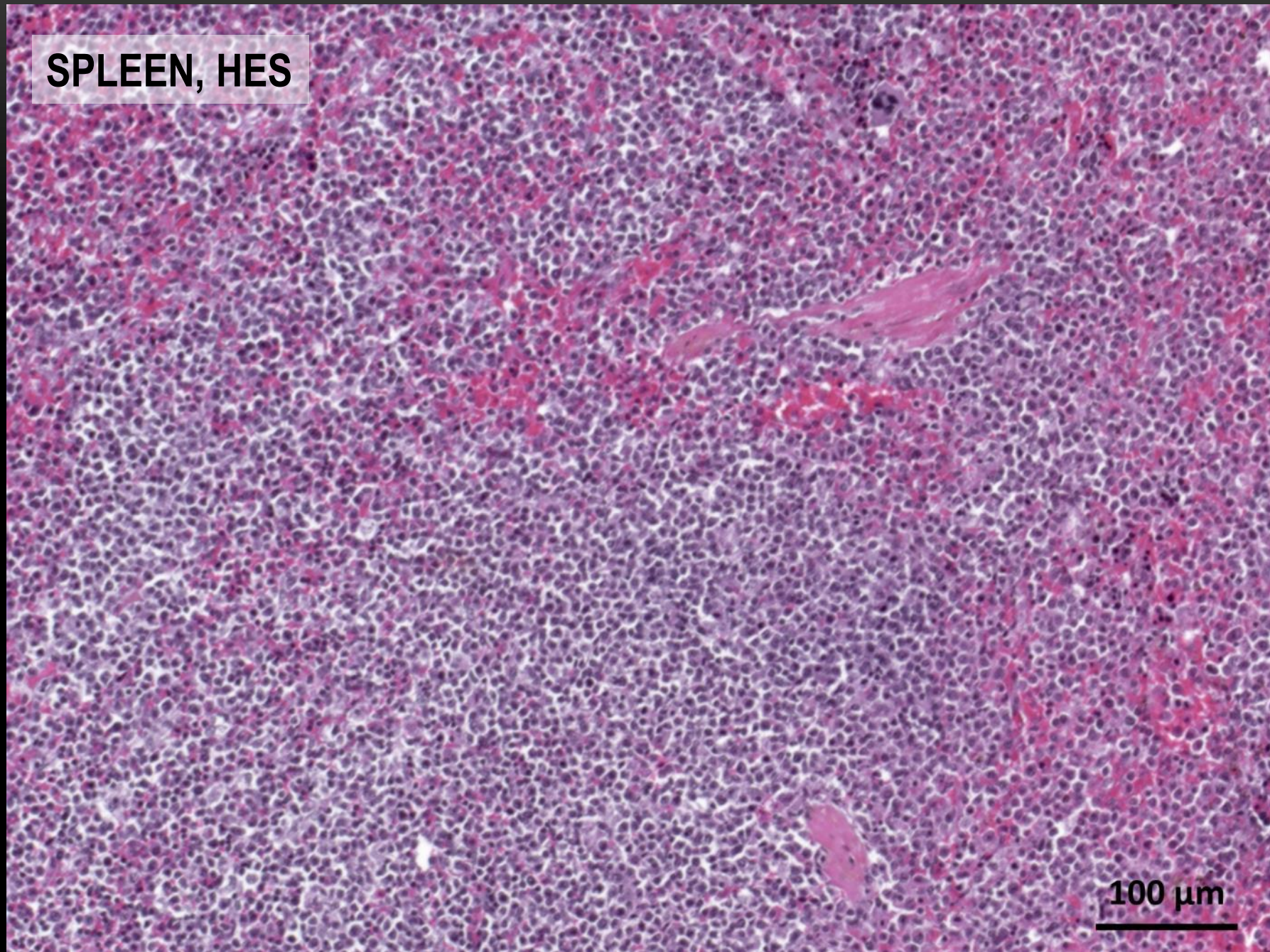
**LIVER, HES**



100 μm



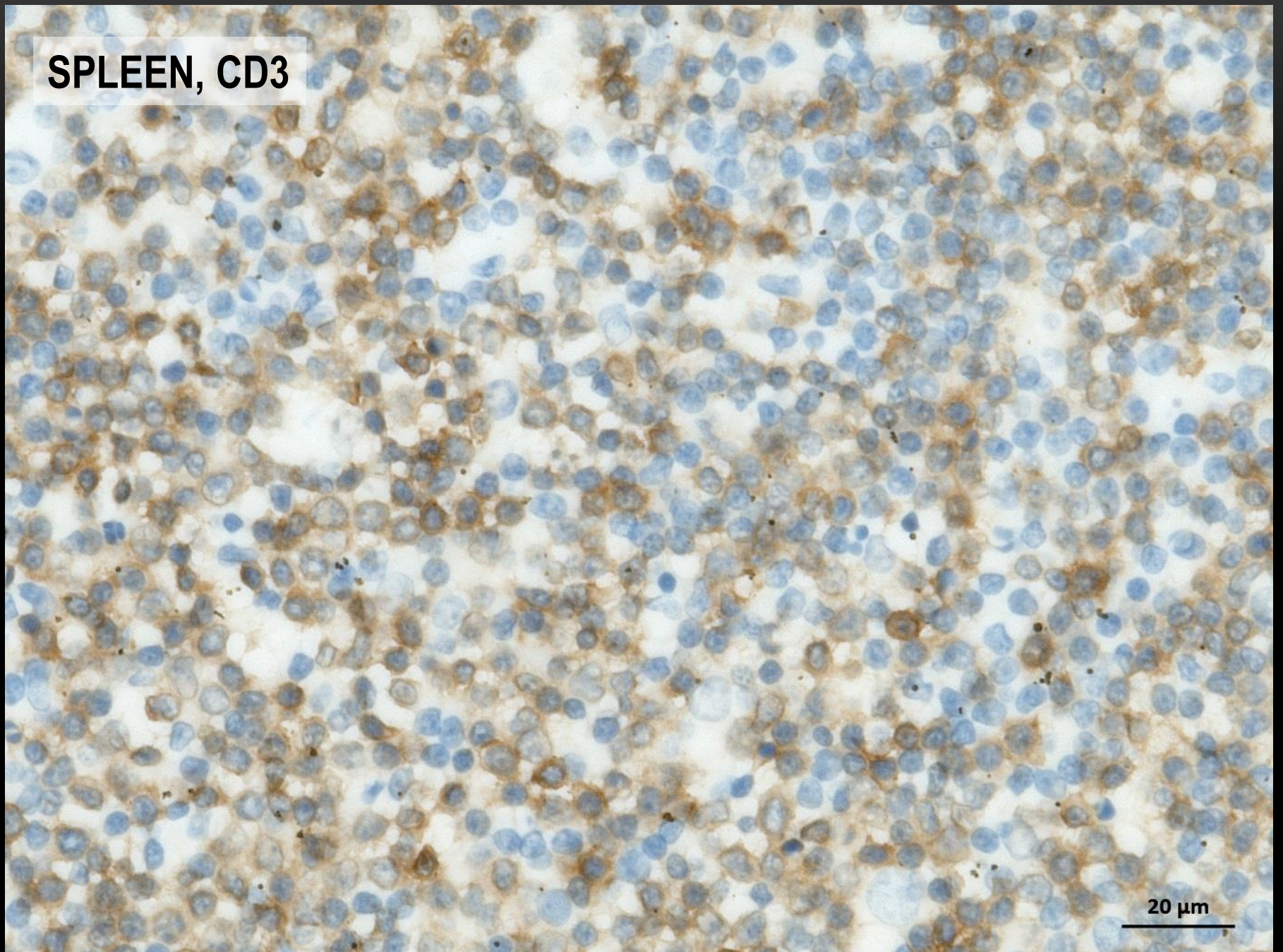
**SPLEEN, HES**



100 μm



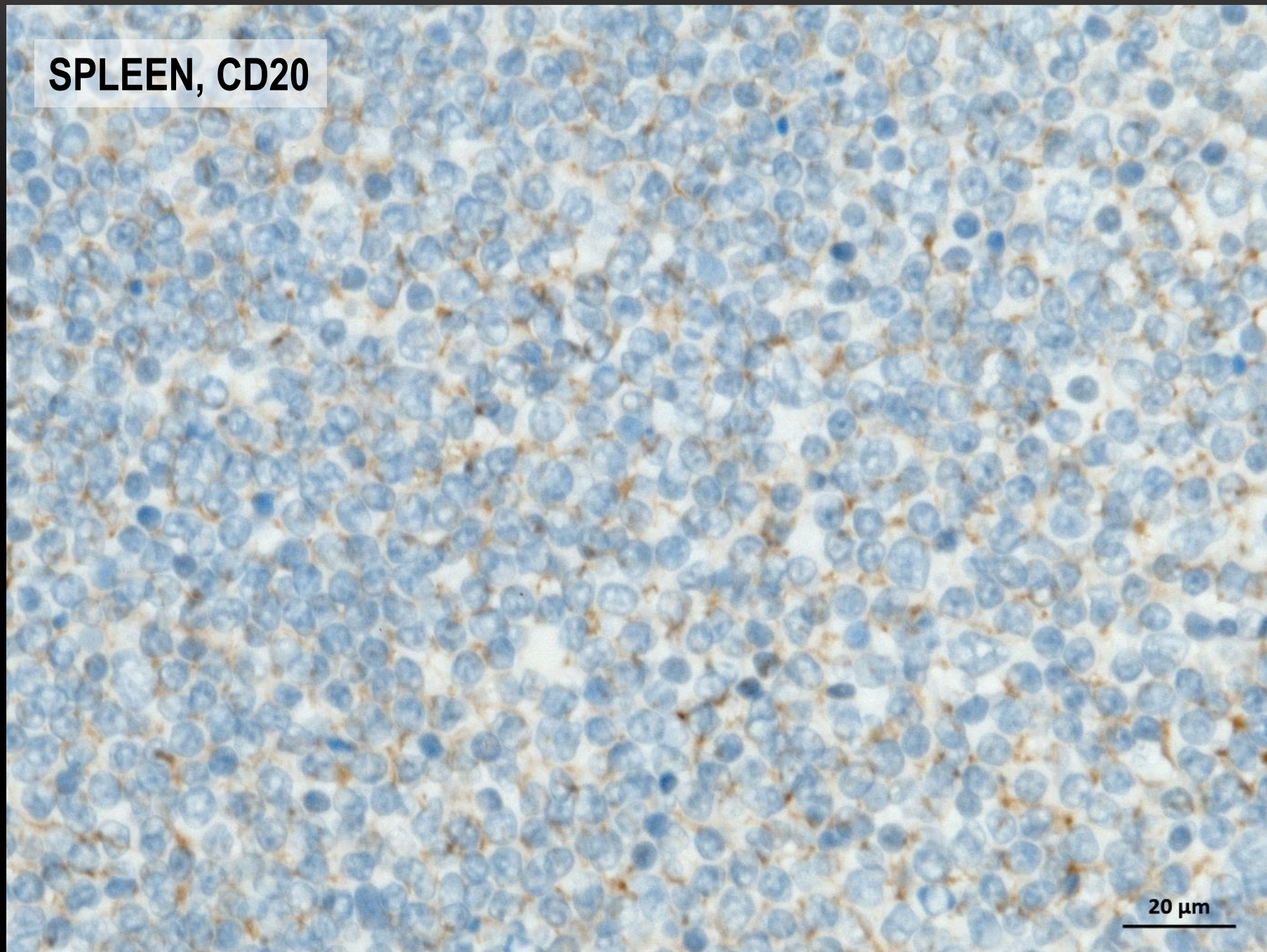
**SPLEEN, CD3**



20 μm

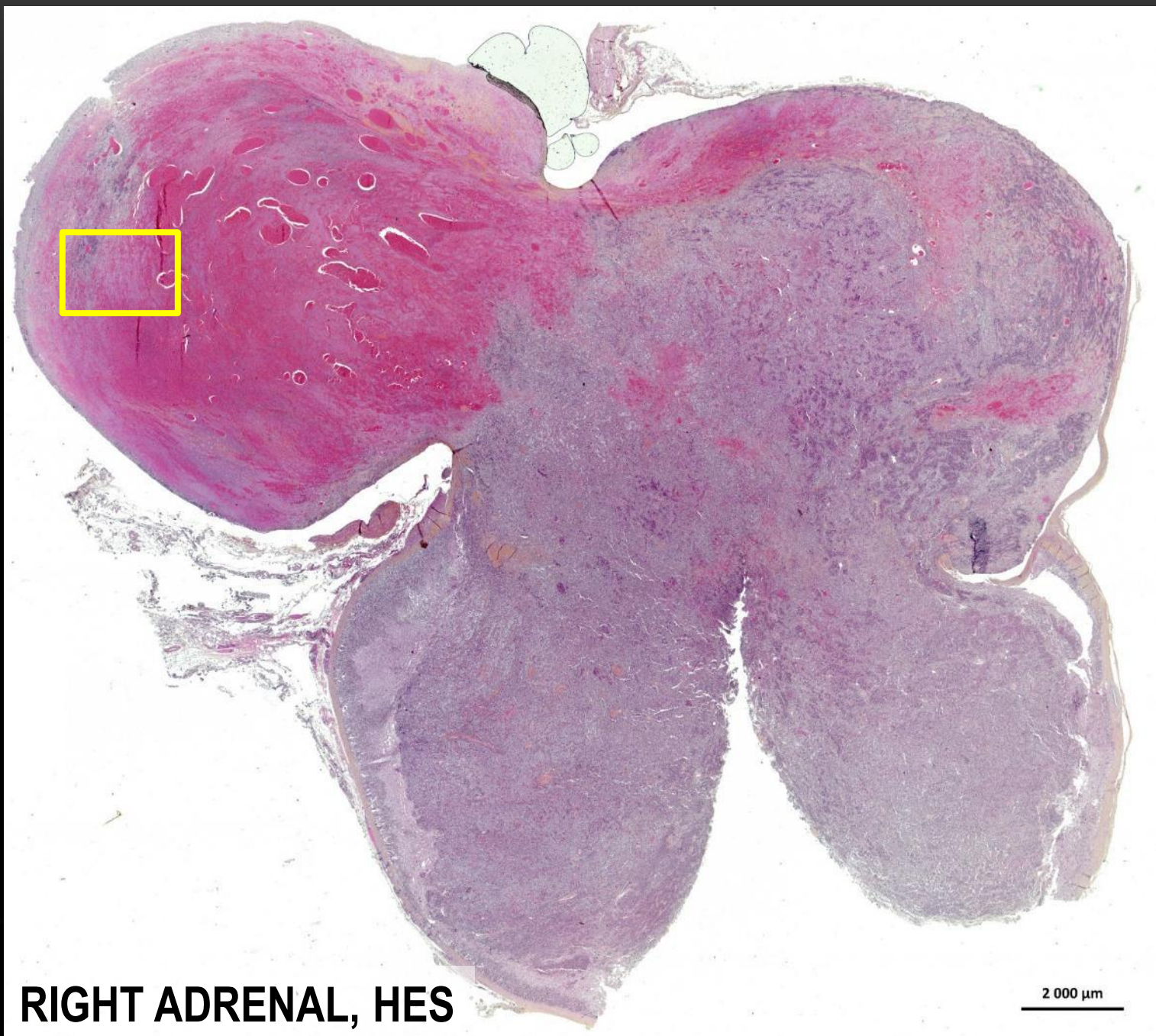


**SPLEEN, CD20**



20 μm



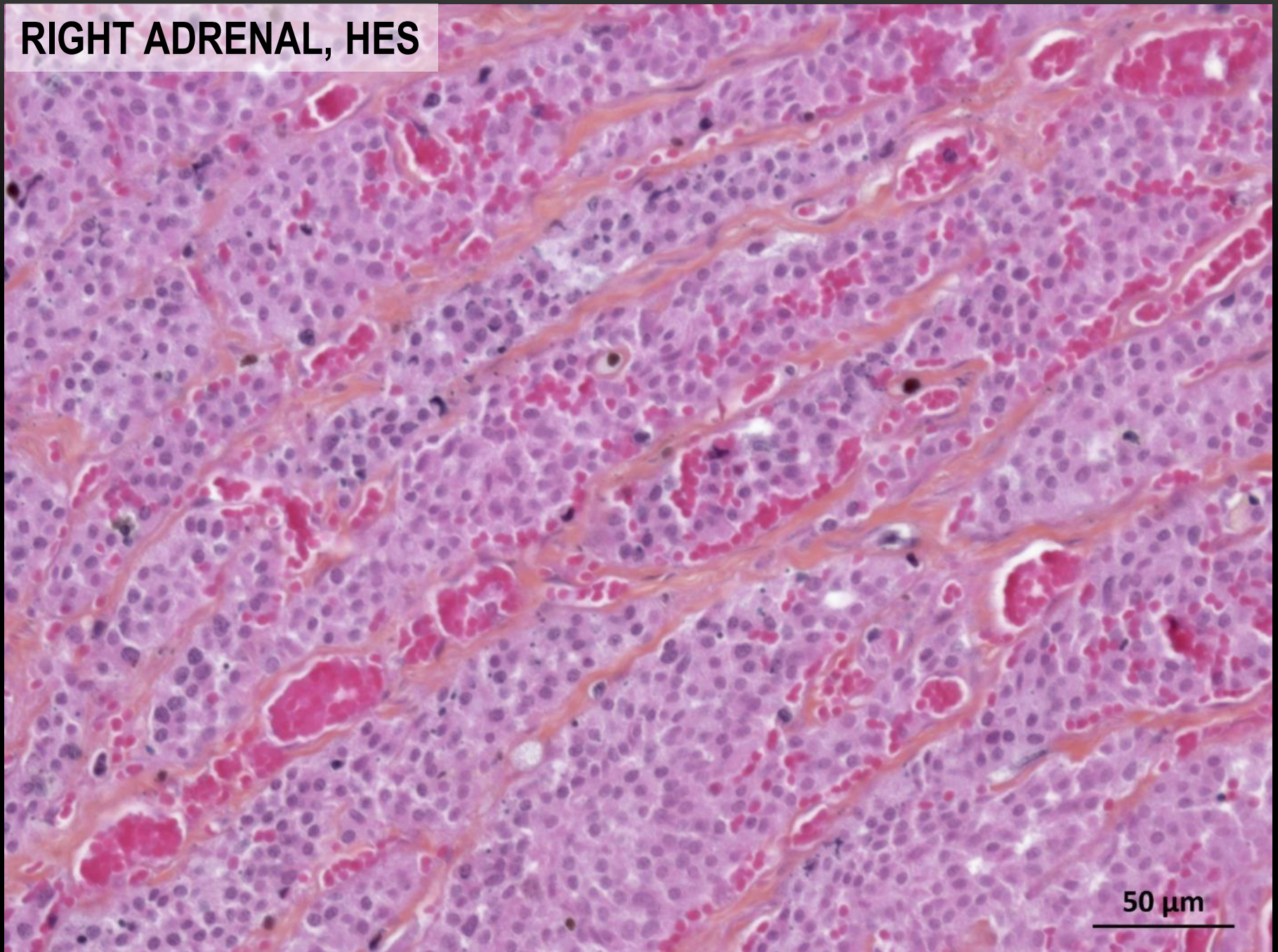


**RIGHT ADRENAL, HES**

2 000  $\mu$ m

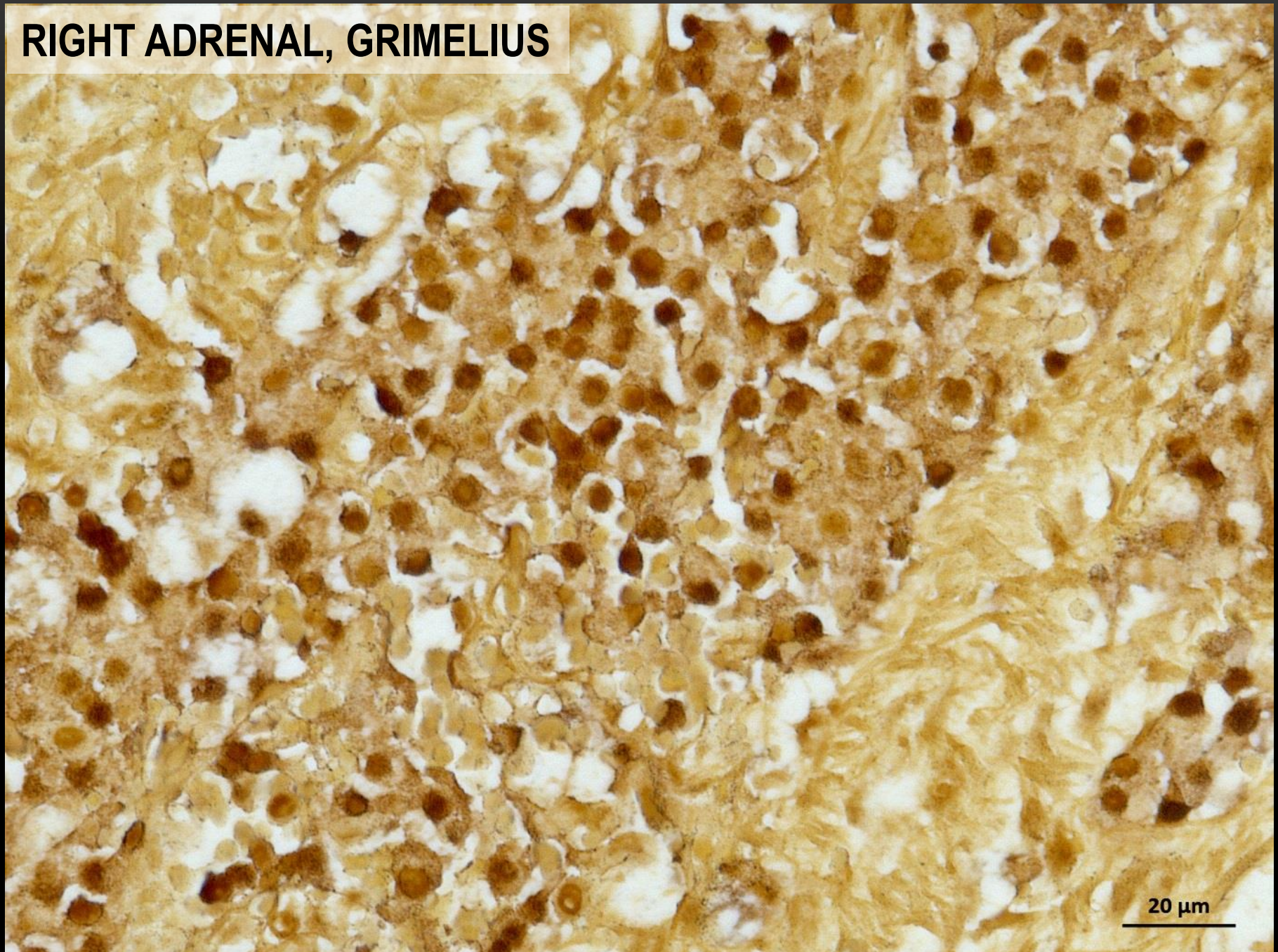


# RIGHT ADRENAL, HES



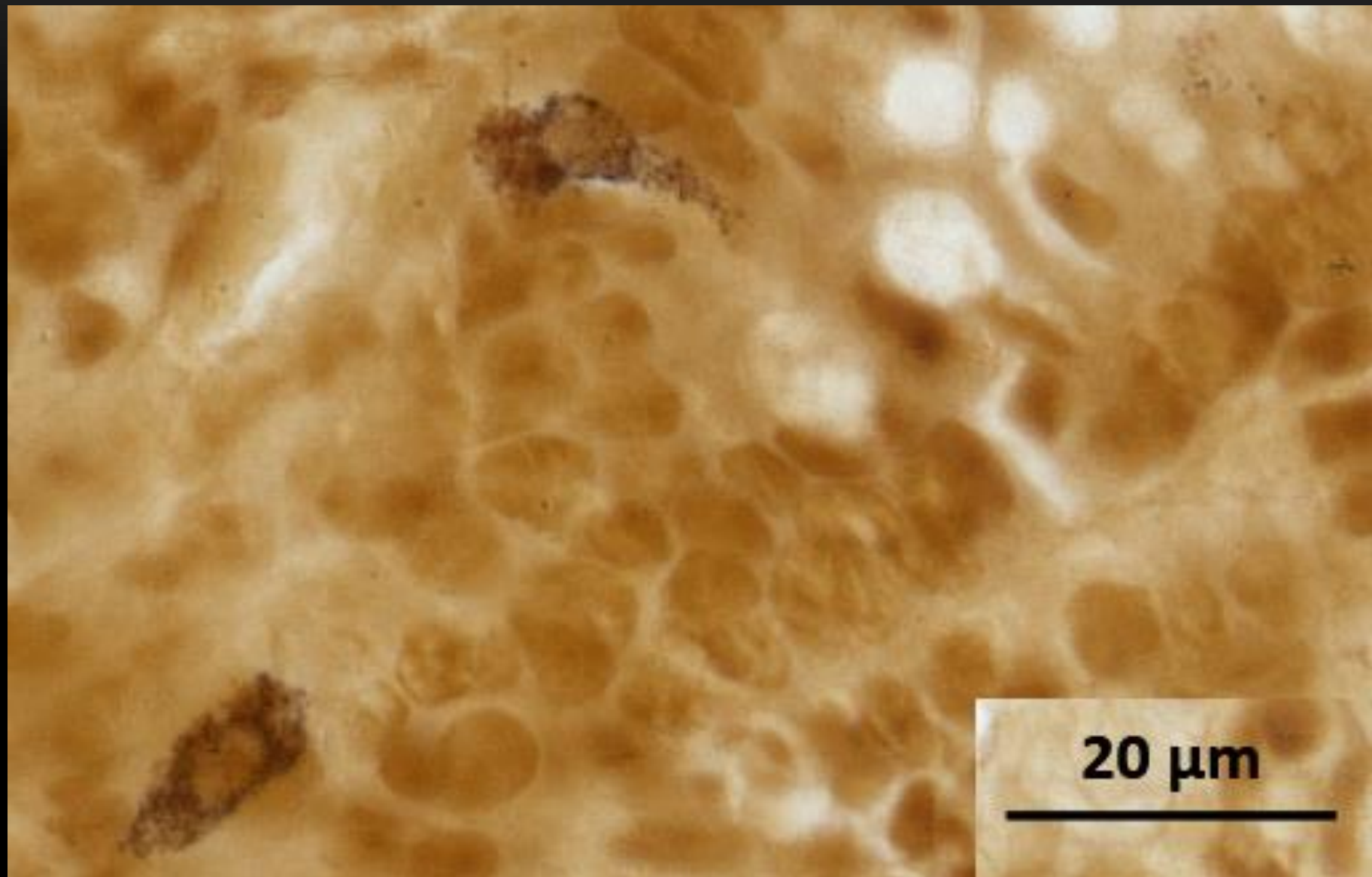


# RIGHT ADRENAL, GRIMELIUS

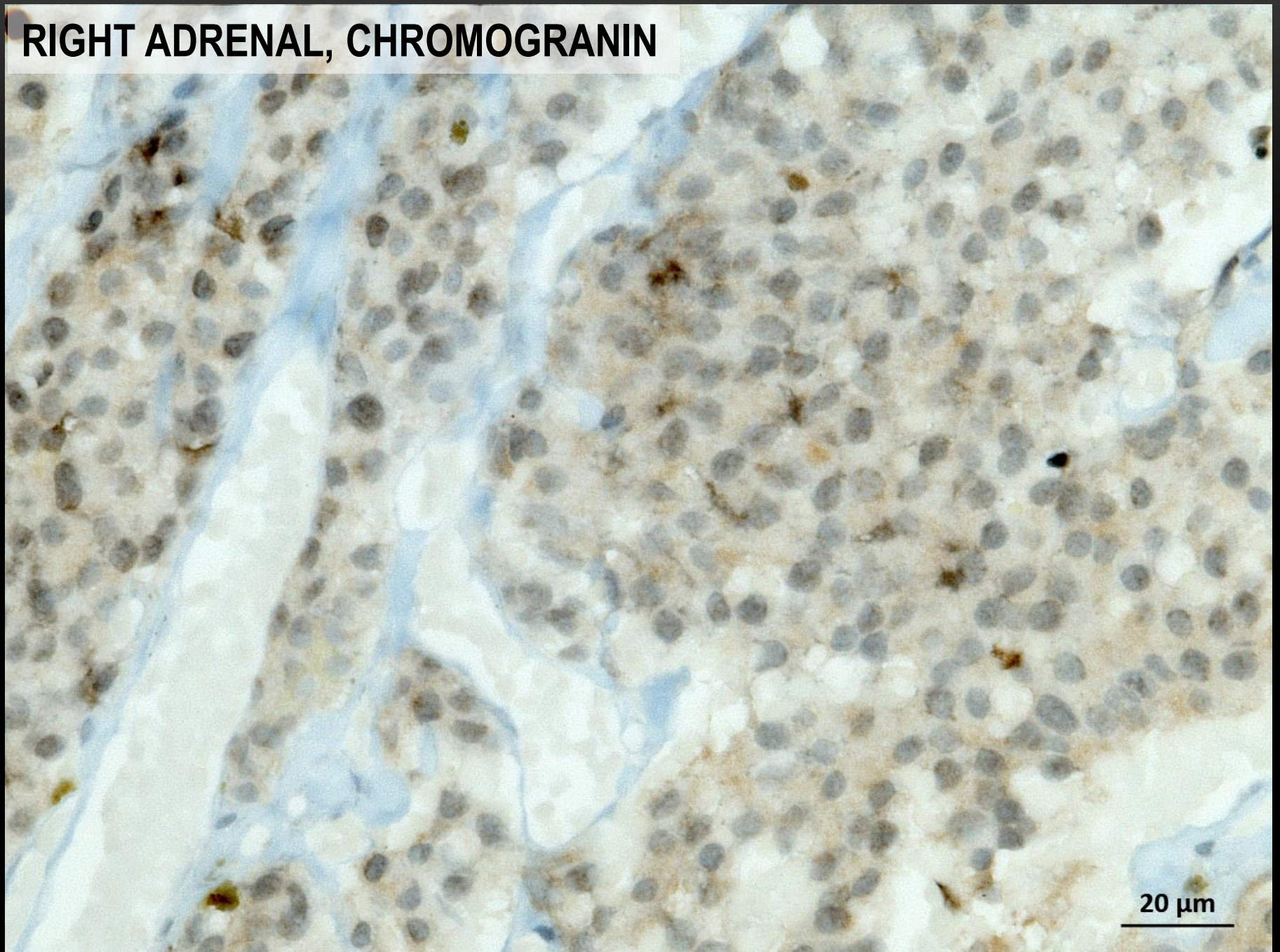




# GUT, POSITIVE CONTROL, GRIMELIUS

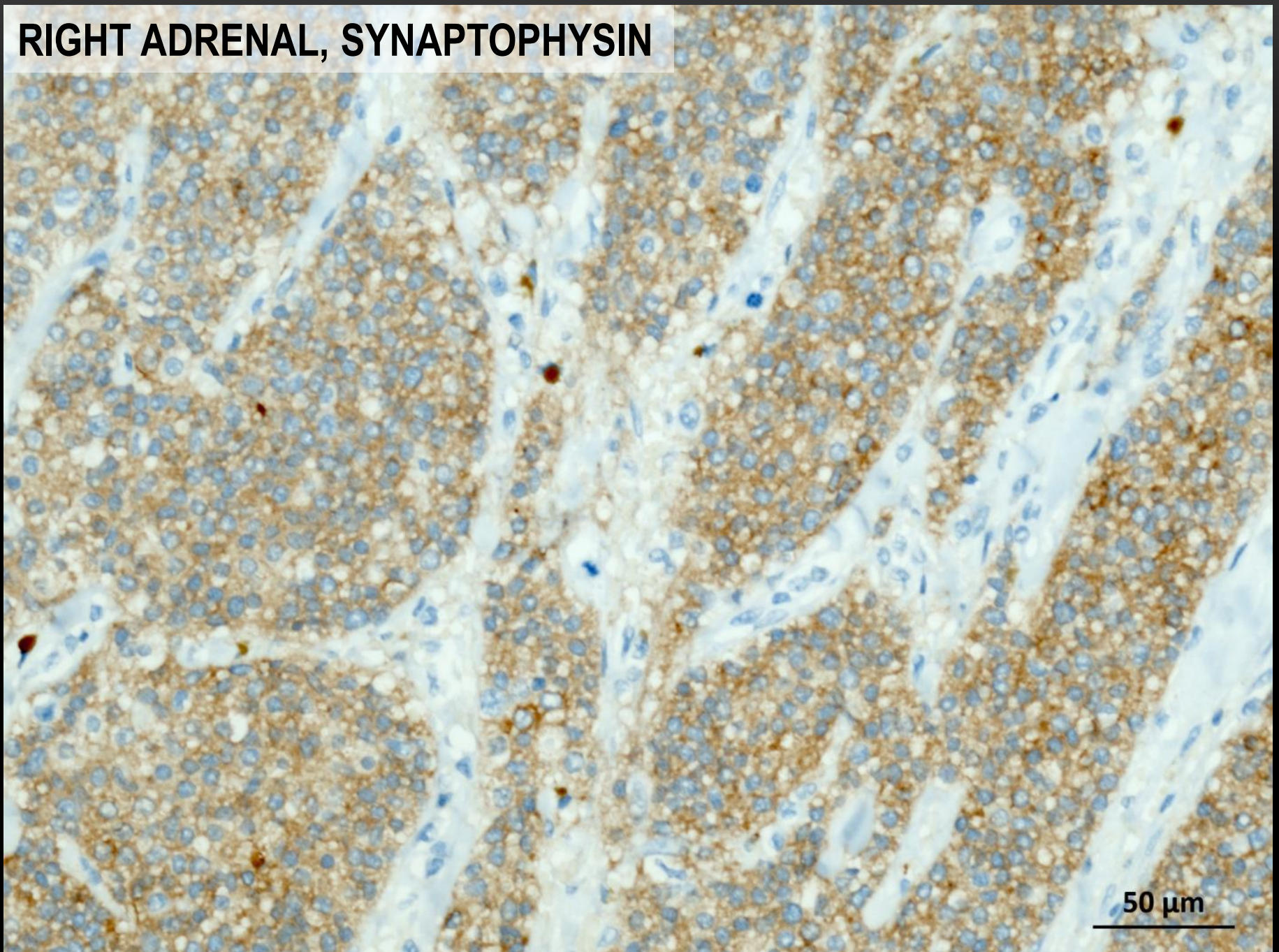


# RIGHT ADRENAL, CHROMOGRANIN





# RIGHT ADRENAL, SYNAPTOPHYSIN



# MICROSCOPIC EXAMINATION

- Confirmation of necropsy hypothesis
- LIVER and SPLEEN : **T-cell lymphoma**
  - No lymph node involvement
  - Hepato-splenic T-cell lymphoma ?
  - No frozen section to test  $\gamma\delta$  TCR by IHC
- RIGHT ADRENAL GLAND : **pheochromocytoma**
  - No signs of systemic effects

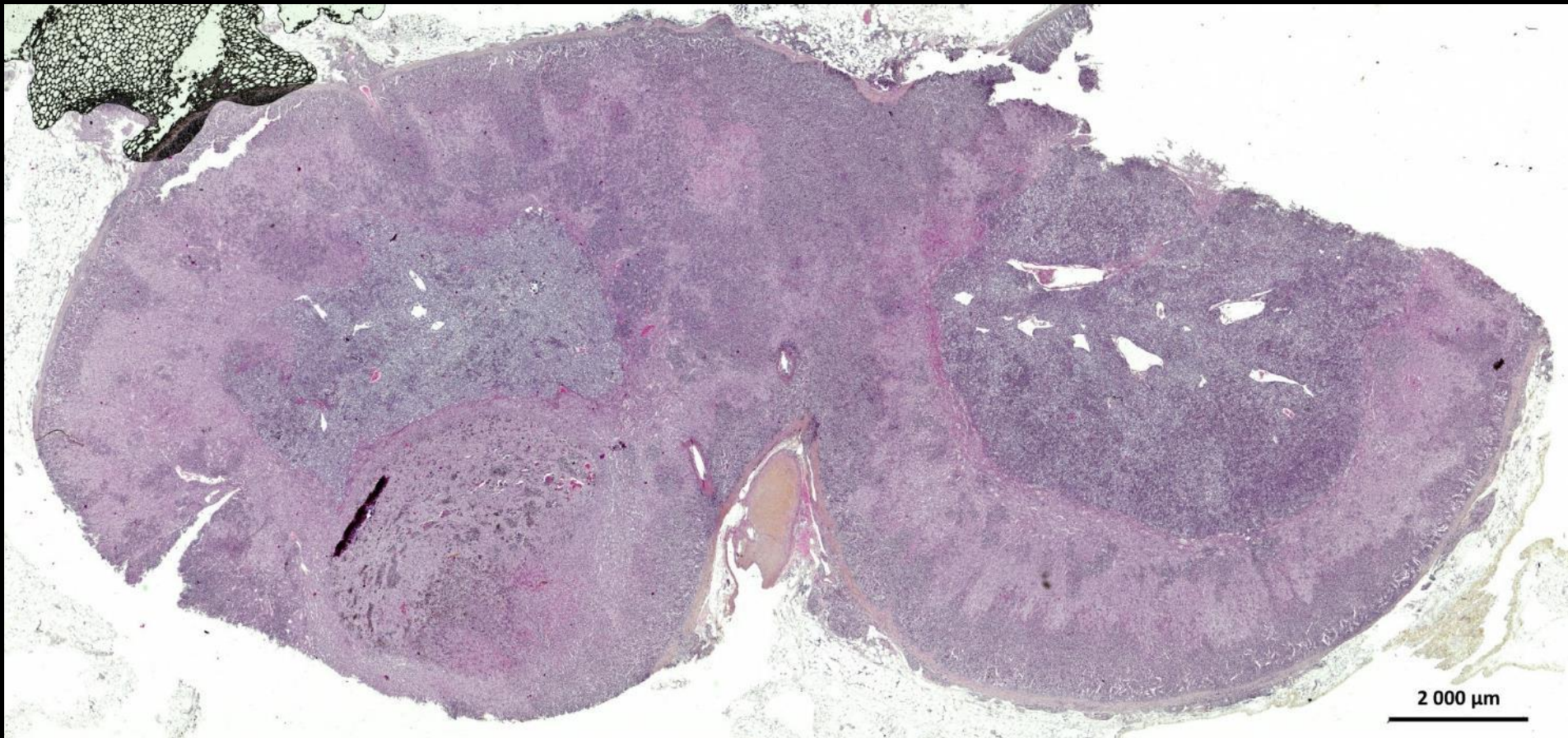


**BUT WAIT A MINUTE...**

A horizontal, glowing orange-yellow light streak that spans across the middle of the slide, positioned just below the text.

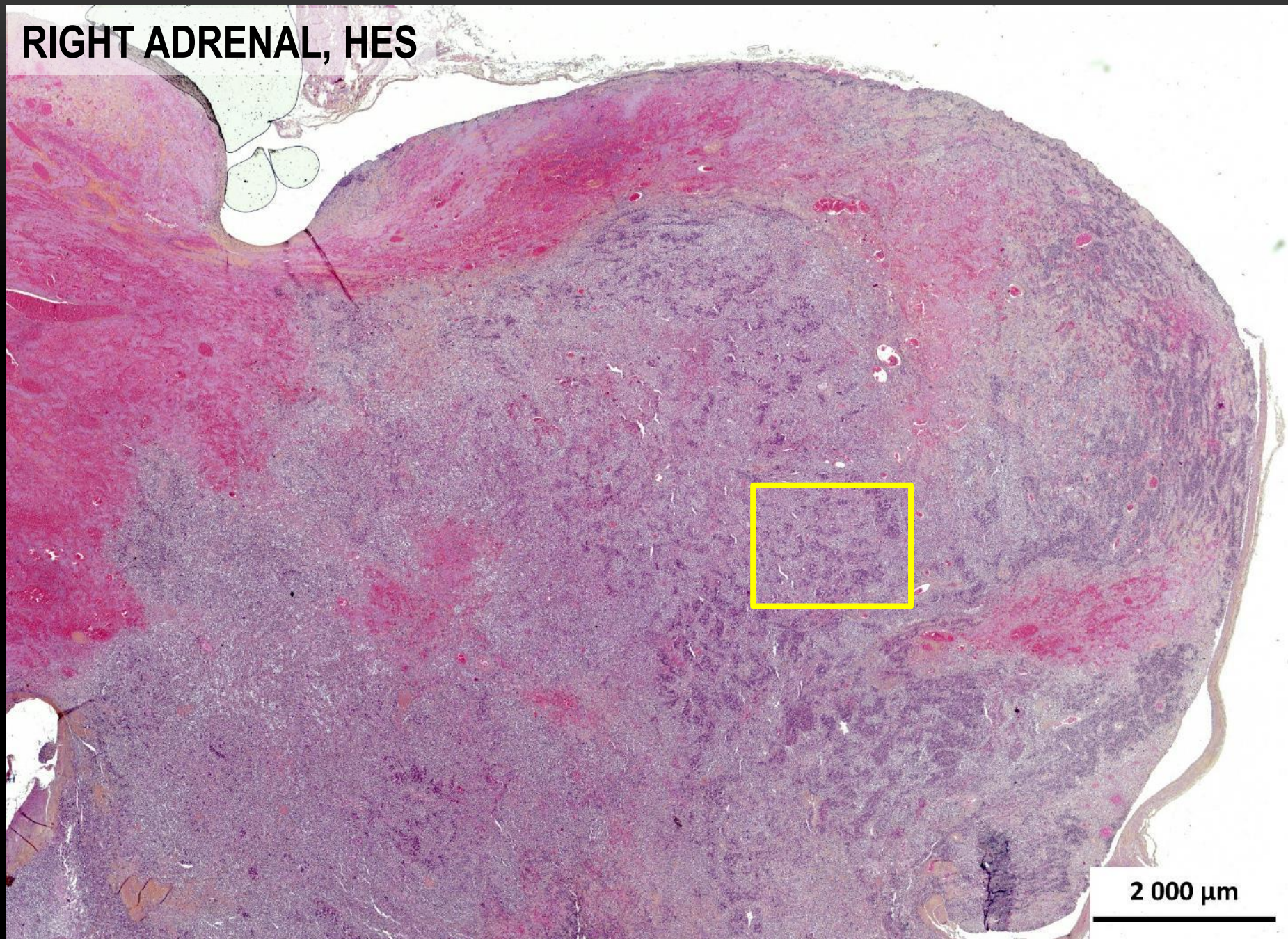
## LEFT ADRENAL, HES

Remember ultrasound report : « Left adrenal gland is slightly increased »



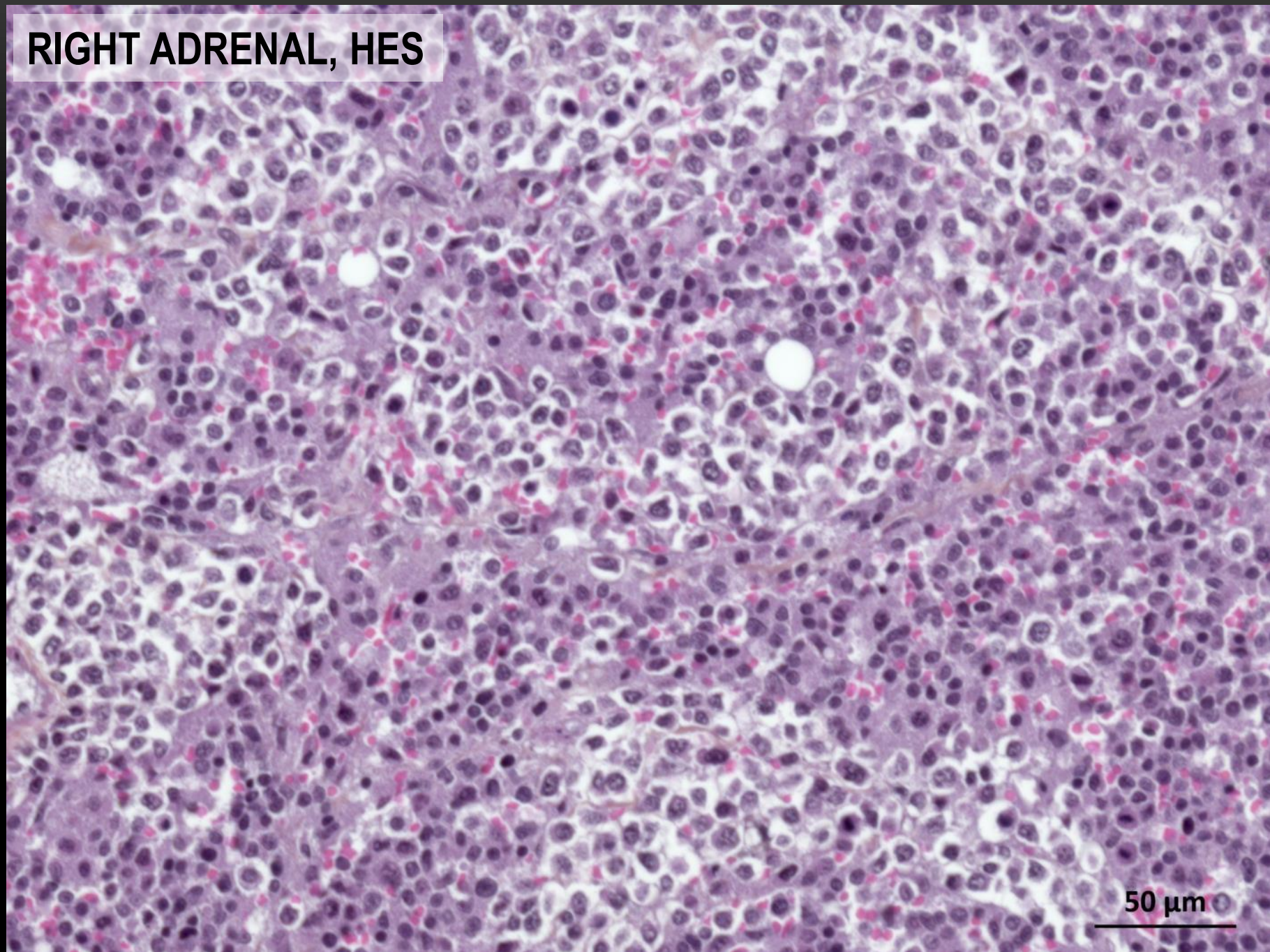


**RIGHT ADRENAL, HES**



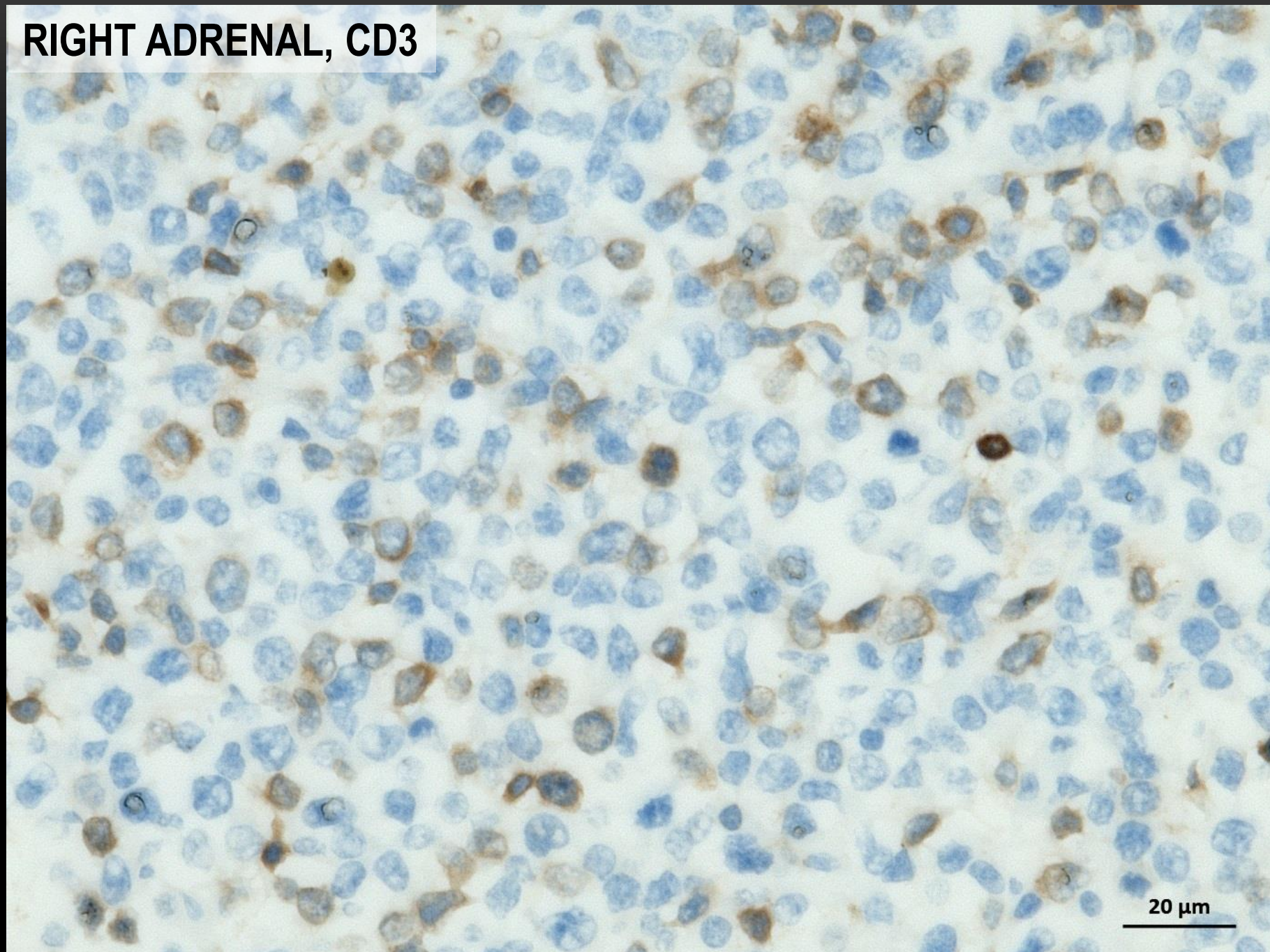


**RIGHT ADRENAL, HES**





# RIGHT ADRENAL, CD3



# CONCLUSION

- T-CELL LYMPHOMA
    - Liver
    - Spleen
    - Both adrenal glands
  - PHEOCHROMOCYTOMA
    - Right adrenal gland
  - LYMPHOMA INSIDE PHEOCHROMOCYTOMA !
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# DISCUSSION

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**« Tumors in tumors »**

# MULTIPLE DISTINCT MALIGNANCIES IN DOGS

- Rebhun & Thamm, 2010 (CSU-VMC)
- 53 (3%) of 1722 dogs presented to oncology service
  - **Thyroid carcinoma** (2.2% total but 32% MDM)
  - **Mast cell tumor** (3.4% / 25%)
  - **Malignant melanoma** (2.1% / 25%)
  - **Lymphoma** (15.6 % total but 4.5% MDM,  $p > 0.05$ )
- No breed or sex predisposition
- Human : 7-10% patients with melanoma or thyroid carcinoma



## « METASTASIS OF A TUMOR IN ANOTHER TUMOR »

- Very rare event in human (Duprez *et al.*, 2009)
- First described in 1829
- Sometime helpful for diagnosis !
- **Definition by Campbell *et al.*, 1968, *Cancer***
  - At least **two distinct neoplasias** (at least one malignant)
  - Neoplastic nature of the **recipient tumor** must be proved
  - Metastasis of the **donor tumor** must develop inside

## « METASTASIS OF A TUMOR IN ANOTHER TUMOR »

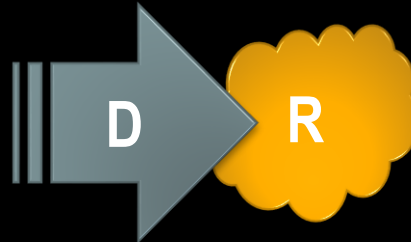
- Several situations are excluded from this definition
  - Complex and mixed tumors
  - Collision
  - Embolisation
  - **Lymphoma infiltration**
  - Leukemia



# MOST « FREQUENT » SITUATIONS

## Malignant

- **Pulmonary carcinoma ++**
- Mammary carcinoma
- Prostatic adenocarcinoma
- Malignant melanoma



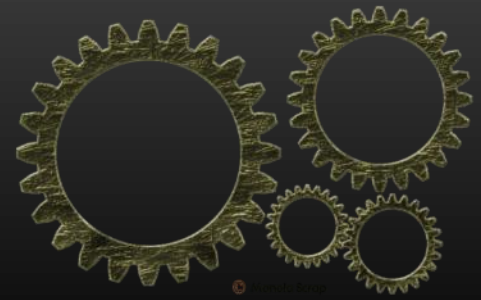
## Benign

- **Meningioma ++**
- Thyroid adenoma
- Pituitary adenoma
- Adrenal cortex adenoma

## Malignant

- **Clear cell renal carcinoma ++**
- Gastric carcinoma
- Pancreatic carcinoma
- High grade astrocytoma
- Prostatic adenocarcinoma

**Not very well studied in veterinary medicine, even the multiple malignancies**



# MECHANISMS ?

- Not well understood but several hypothesis
- Specific homing of tumor cells (integrins, selectins, other receptors)
- **Vascular abnormalities ++**
  - For the donor and the recipient tumor
  - VEGF (clear cell renal carcinoma) / veinous network (meningioma)
  - *Enhanced permeability and retention effect*
- **Hormonal factors ?**
  - Mammary carcinoma metastasis inside meningioma
  - Strong expression of E2 and P4 receptors in both tumors
- **Trophic factors-rich recipient** (CCRC, meningioma)
- **Inflammation-free recipient** (meningioma)



# THANKS FOR YOUR ATTENTION !

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Thanks to Pr Fontaine and other teachers

Thanks to technicians and engineers of histopathology service

Thanks to Dr Fiette and the SFAPV for organizing this event