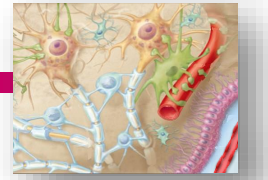


NEUROPATHOLOGY
HISTOLOGY

HAJNALKA RAJNAI

Semmelweis Egyetem – I. Patológiai és Kísérleti Rákkutató Intézet

rajnai.hajnalka@med.semmelweis-univ.hu

Quick search slide | View type: Default | Order by: Slide type

02-13-Neuropathology (0)

Description ...

Examined

Glioblastoma
n/a
n/a
n/a
2019-04-12 10:44:25
1.42 GB
CCSU

Examined

Medulloblastoma
n/a
n/a
n/a
2019-04-12 10:47:06
1.58 GB
CCSU

Examined

Meningeoma
n/a
n/a
n/a
2019-04-16 09:24:21
4.78 GB
CCSU

Examined

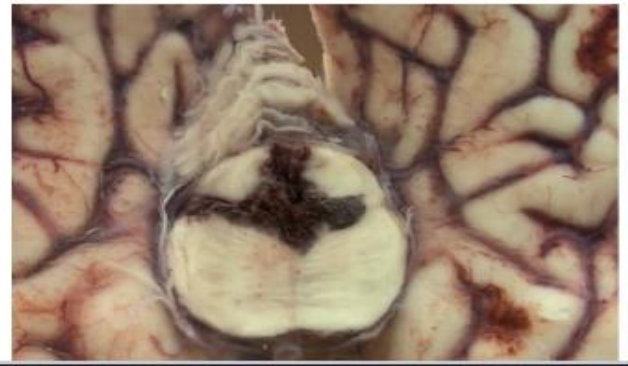
Parkinson kór
n/a
n/a
n/a
2019-04-16 12:37:57
1.47 GB
CCSU

Examined

Schwannoma
n/a
n/a
n/a
2011-09-21 11:43:56
404.03 MB
CCSU

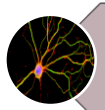
New

Anecepahlia-1
n/a
n/a
n/a
2019-04-23 10:24:43
1.32 MB
CCSU



PRIMARY TUMORS OF THE CNS

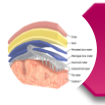
Gliomas



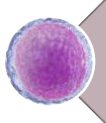
Neuronal or mixed glioneural tumors

Choroid plexus neoplasms

Embryonal tumors

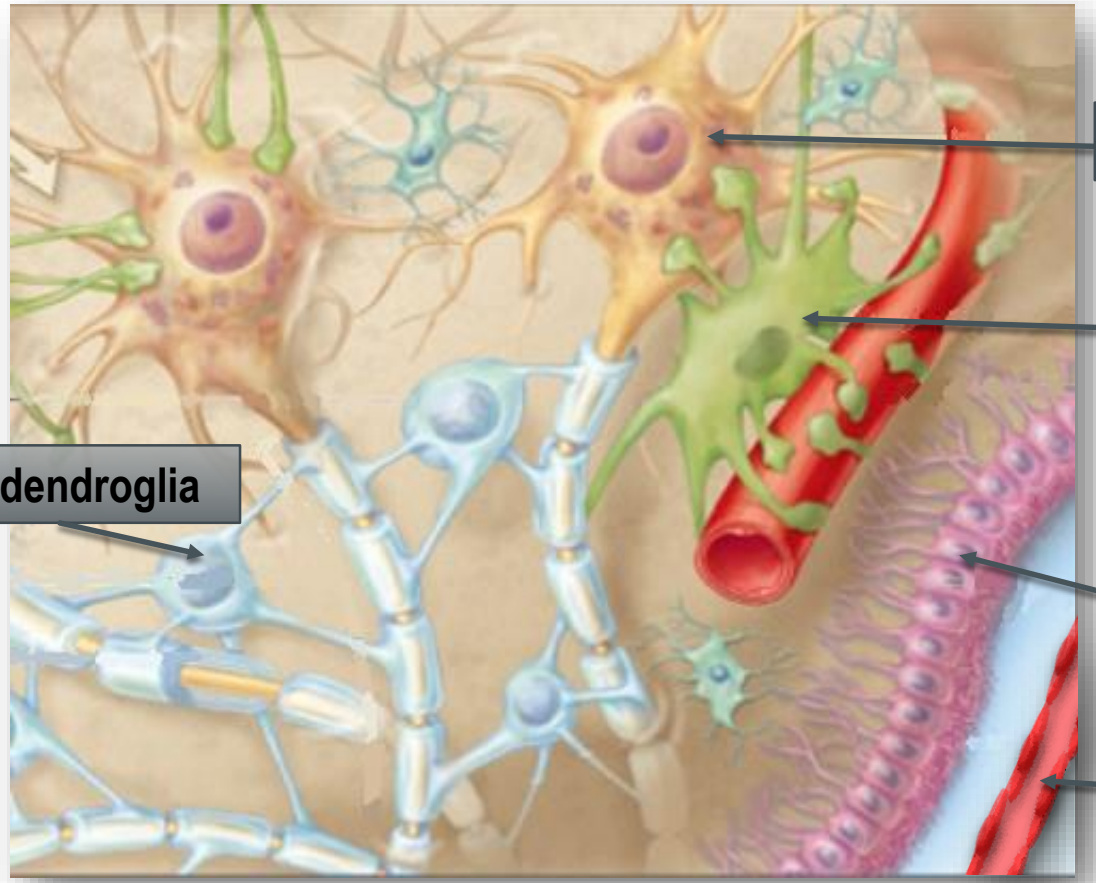


Meningial tumors



Other parenchymal tumors

- Haematologic malignancies
- Germ cell tumors



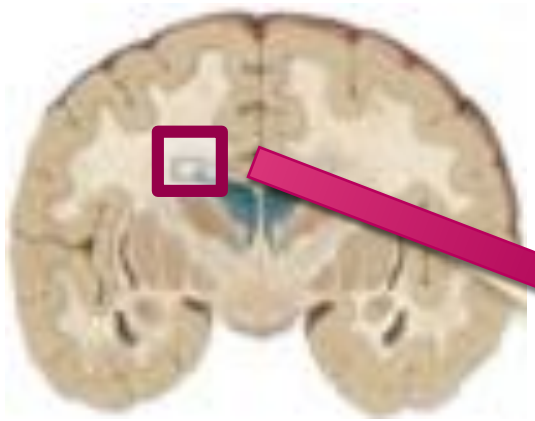
CHARACTERISTICS

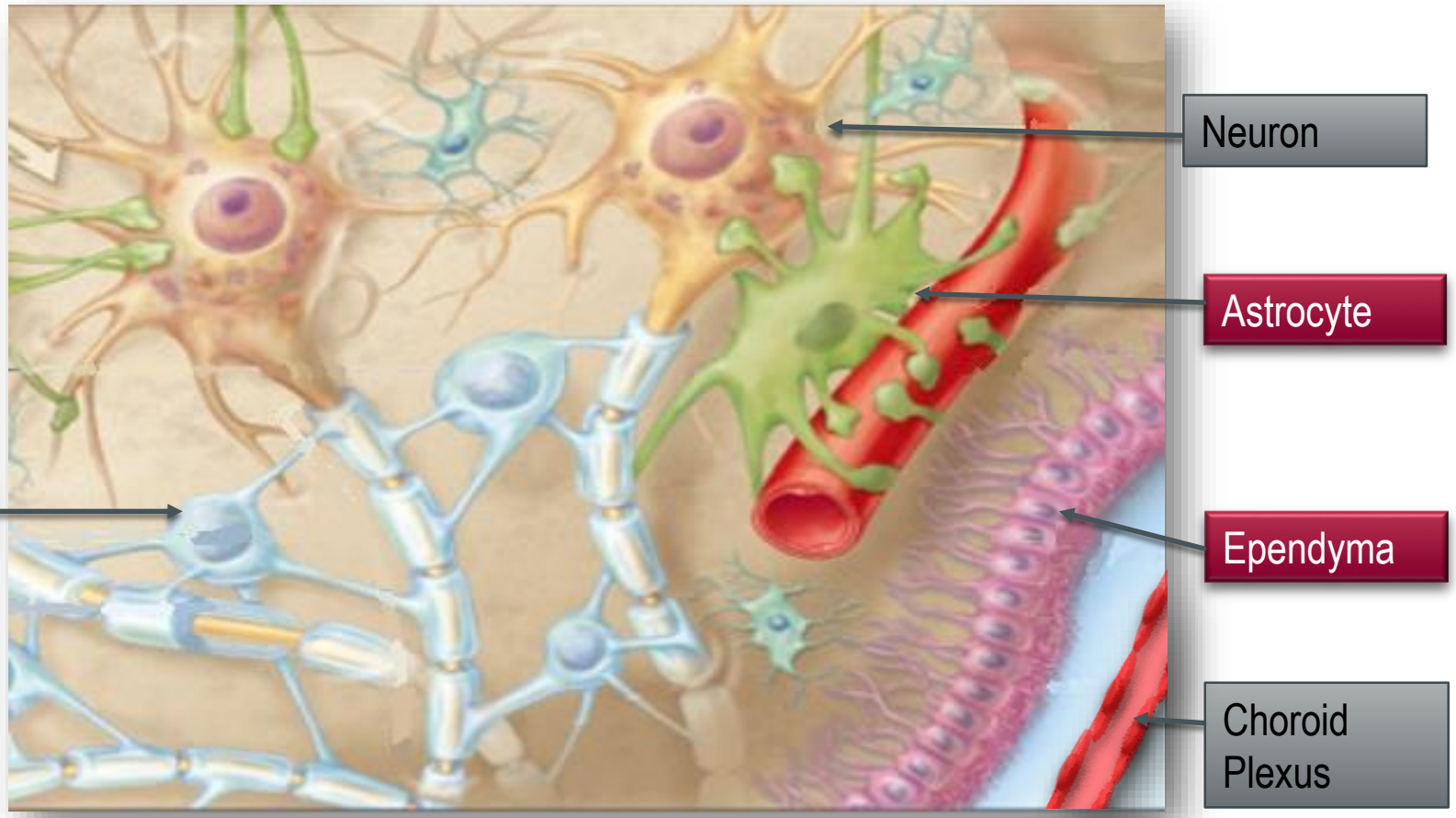
- Diagnosis
  - Age
  - Sex
  - Site of neoplasm
  - Family history
- Do not have premalignant or in situ stages
- Rarely spread outside of the CNS

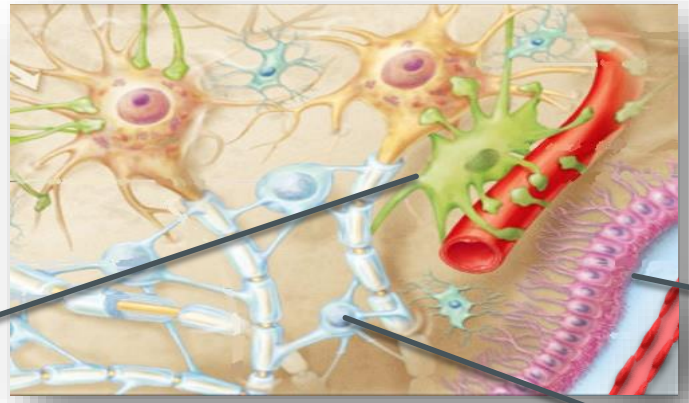
Grade

- Predicting the biological behaviour
- Grade I
  - Low proliferative potential
  - Possibility of curative resection
- Grade II
  - Infiltrative
  - Often recur
  - Progression
- Grade III
  - Histological evidence of malignancy
  - High mitotic activity, atypia
- Grade IV
  - Cytologically malignant
  - Rapid disease evolution

GLIOMAS




Neuron
Astrocyte
Oligodendroglia
Ependyma
Choroid Plexus



Astrocytomas

Oligodendrogliomas

Ependymomas

GRADE I

Pilocytic astocytoma

GRADE II

Diffuse astocytoma

Oligodendroglioma

Ependymoma

GRADE III

Anaplastic astocytoma

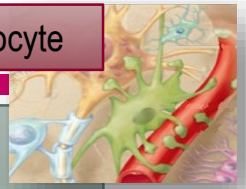
Anaplastic Oligodendroglioma

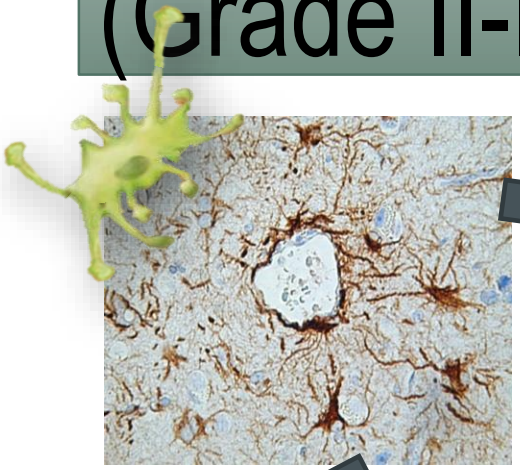
Anaplastic Ependymoma

GRADE IV

Glioblastoma

Diffuse gliomas with astrocytic differentiation (Grade II-IV)

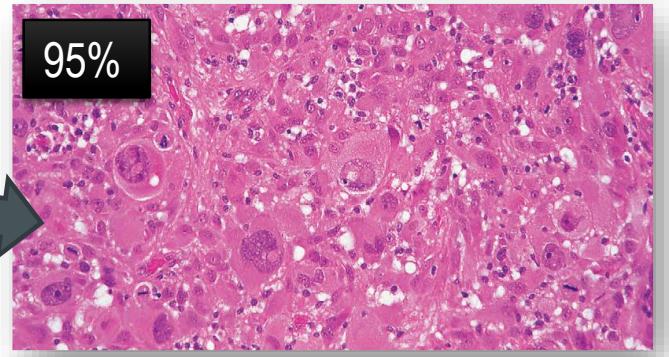




TERT mutation

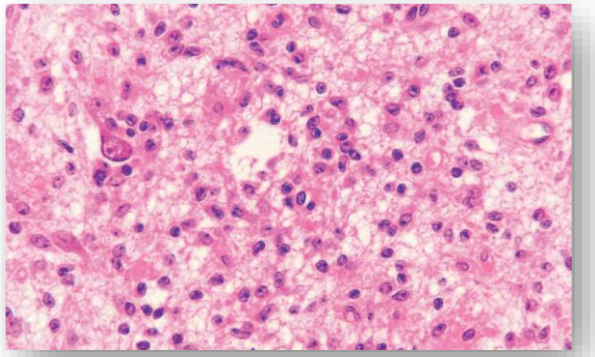
RTK/PI3K/AKT pathway

P53/pRB pathway



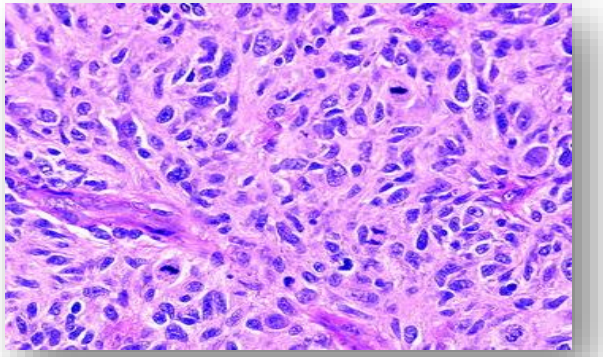
Primer Glioblastoma Gr. IV

IDH1/IDH2
P53/ATRX mut



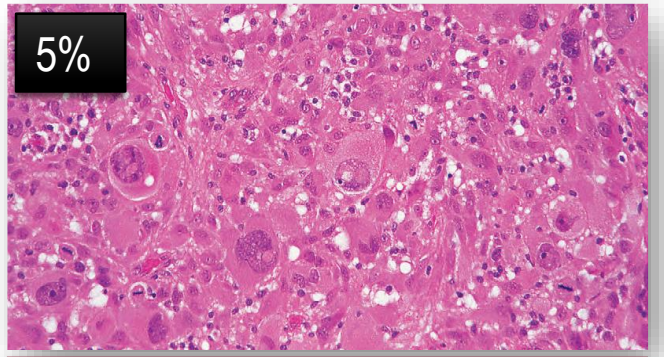
Astrocytoma Gr. II

MYC, CCND2



Anaplastic astrocytoma Gr. III

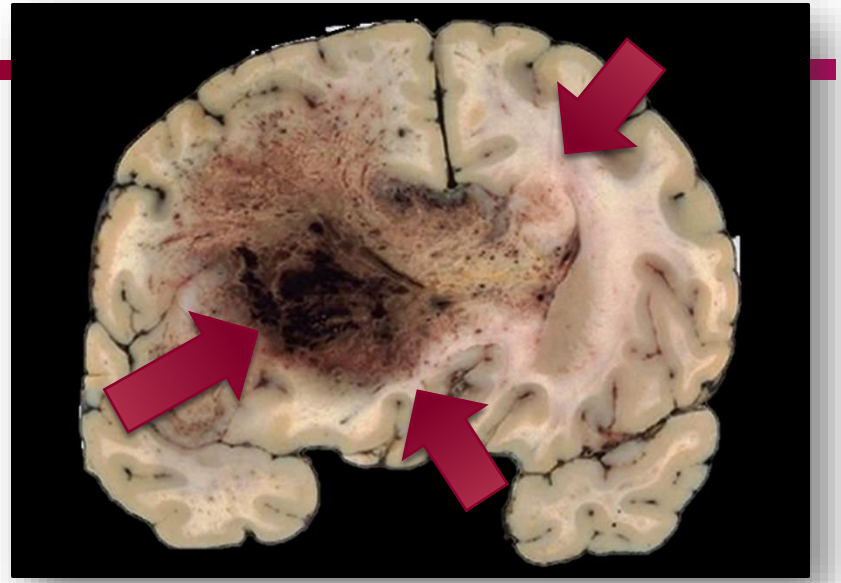
PIK3CA
MET

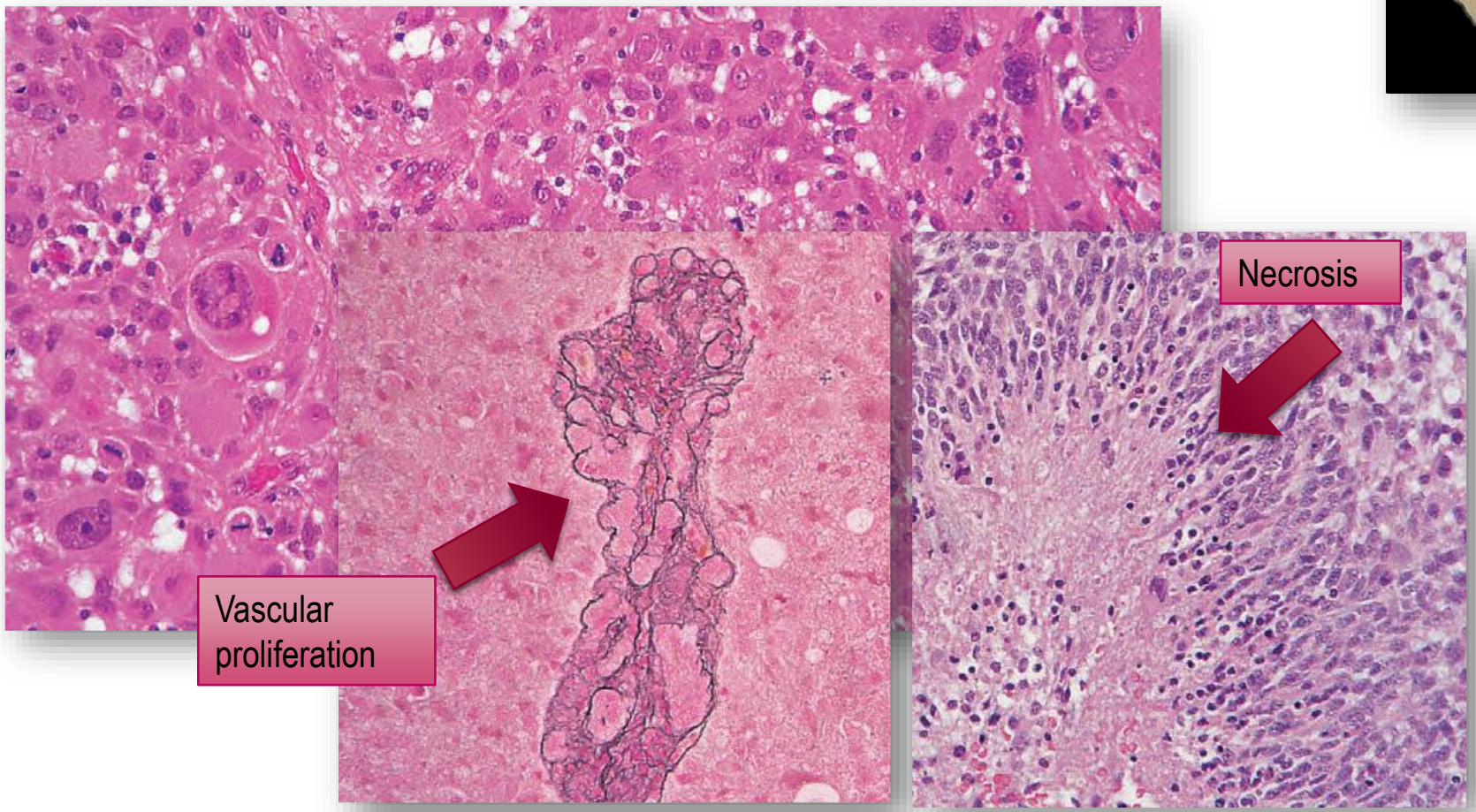


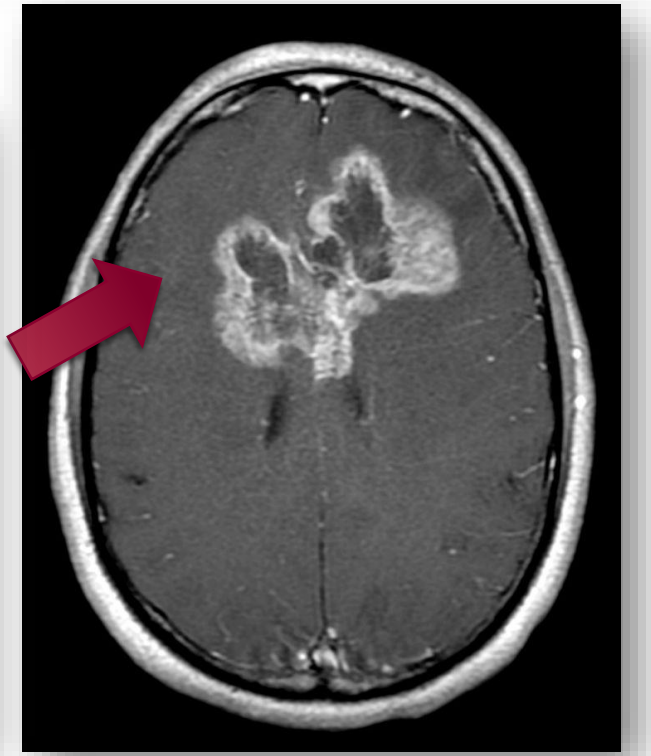
Secunder Glioblastoma Gr. IV

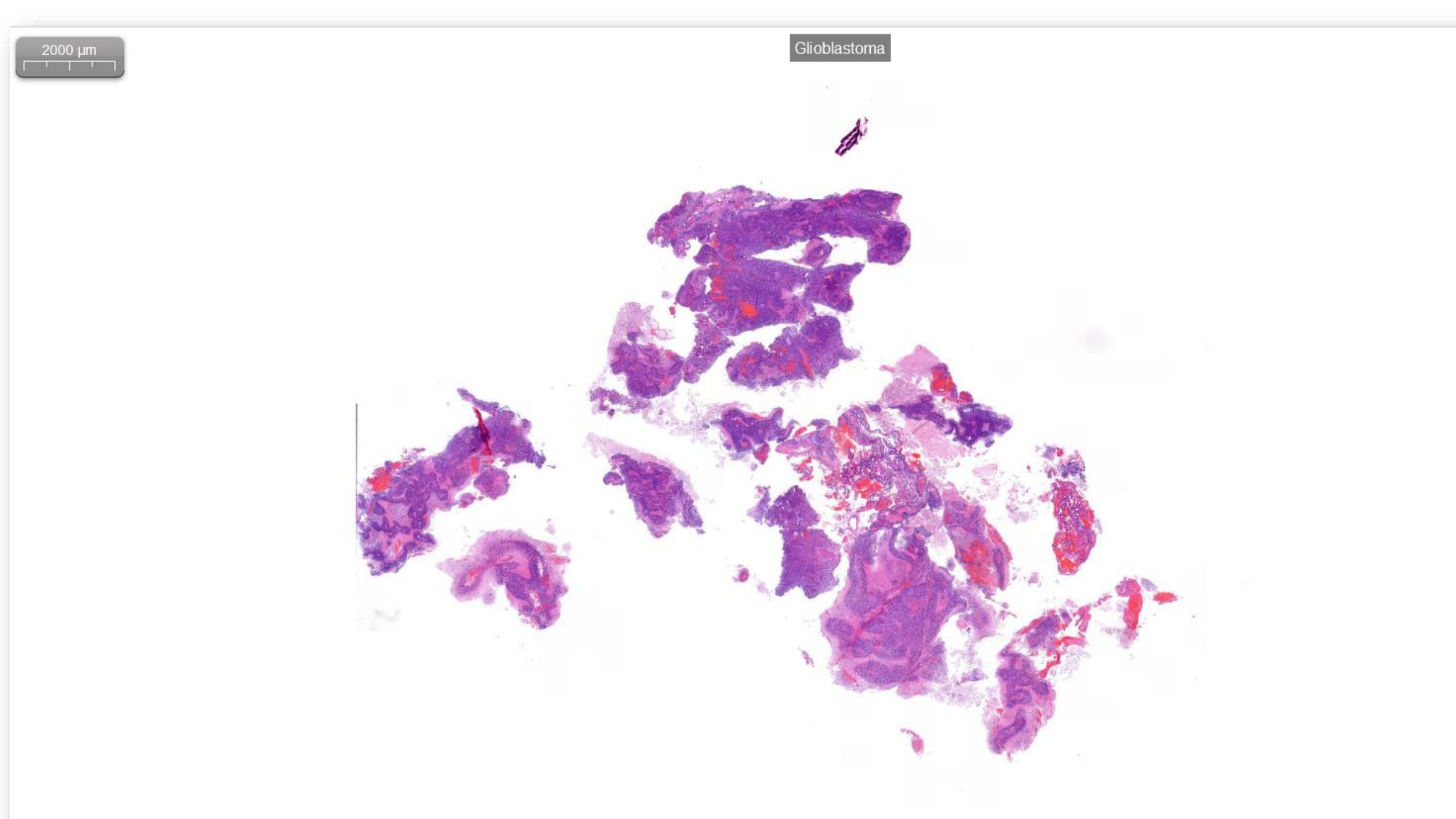
Glioblastoma Grade IV

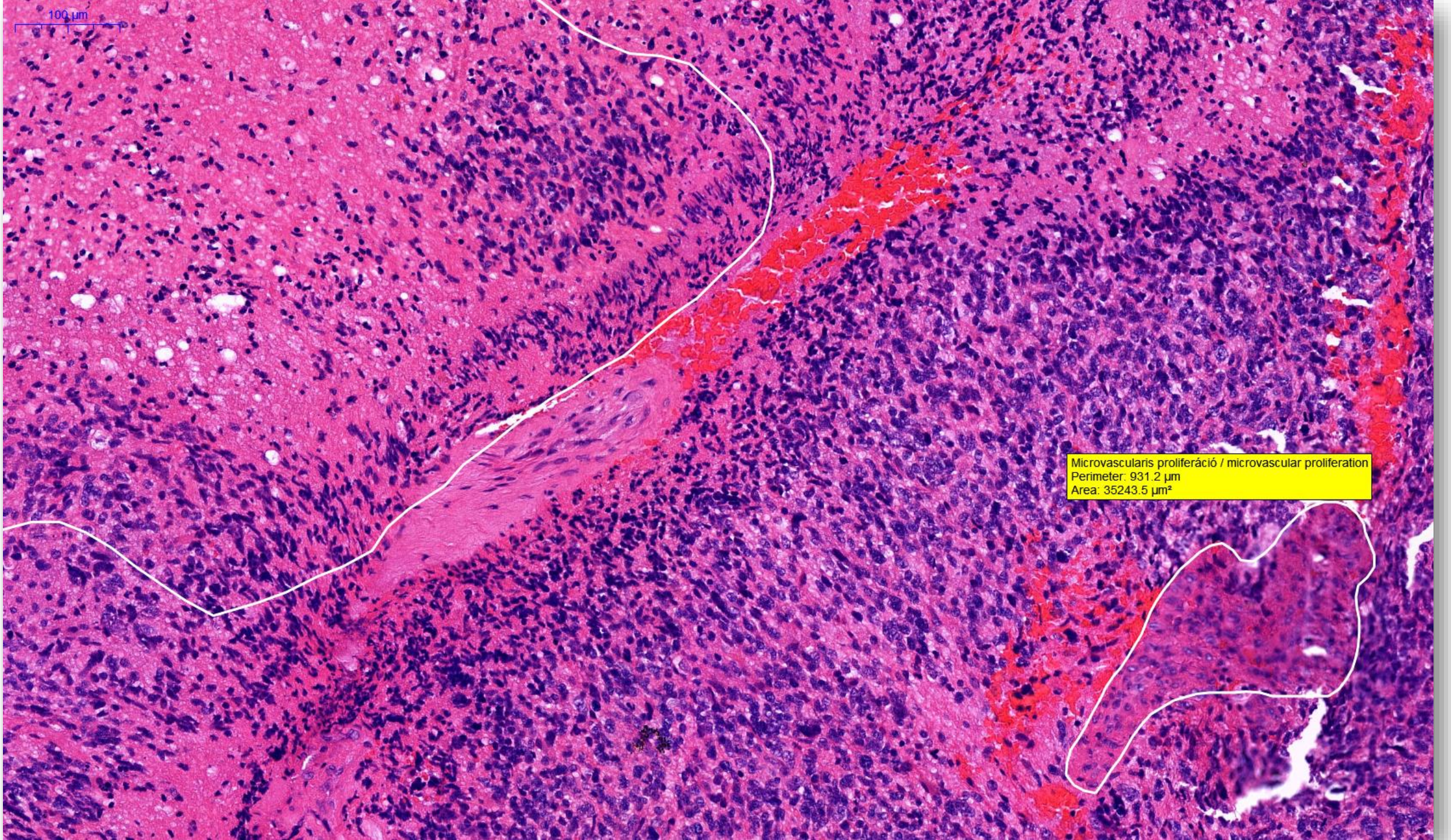
- Atypia + High cellularity + High mitotic activity + Necrosis/Endothel proliferation

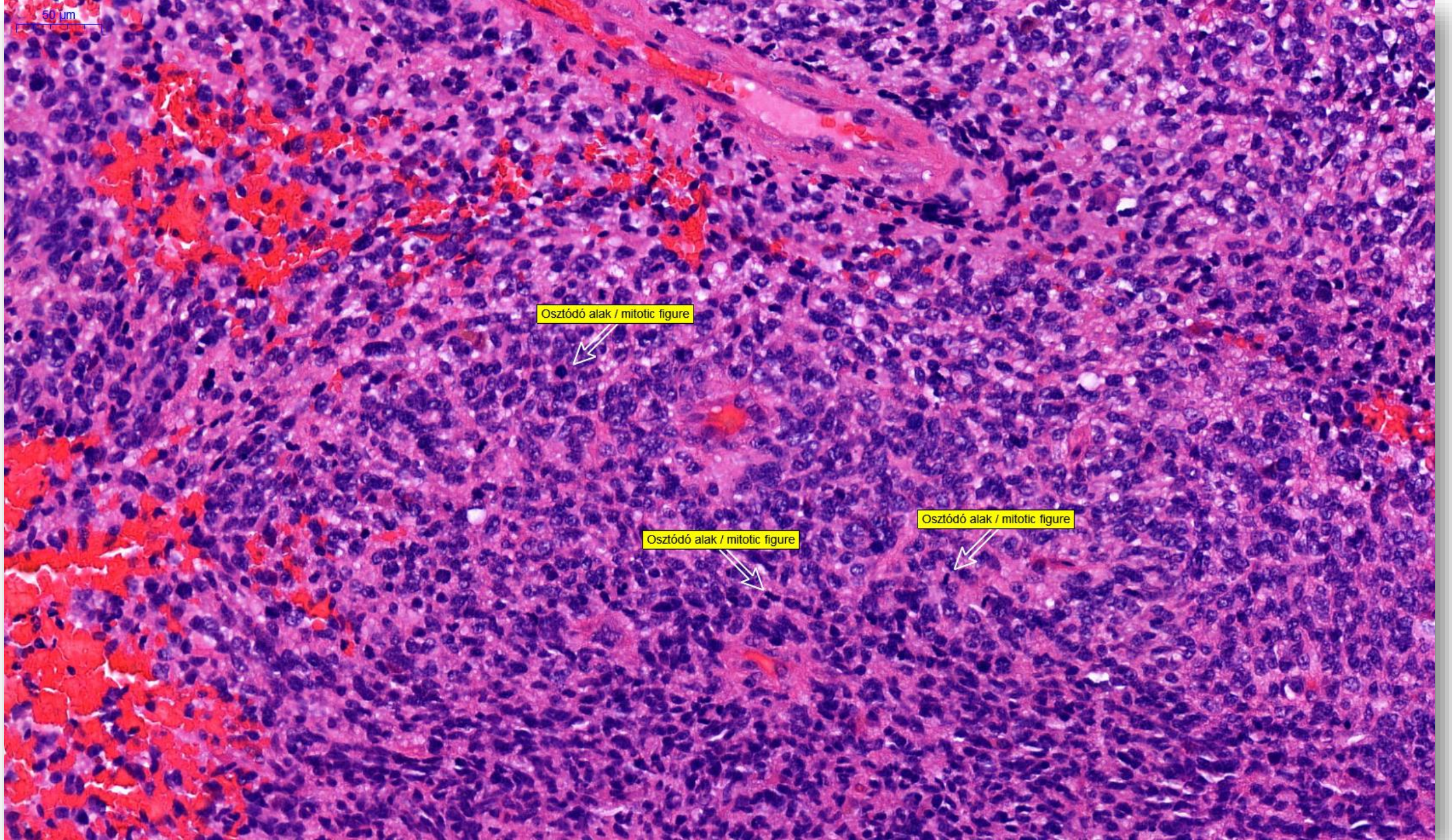


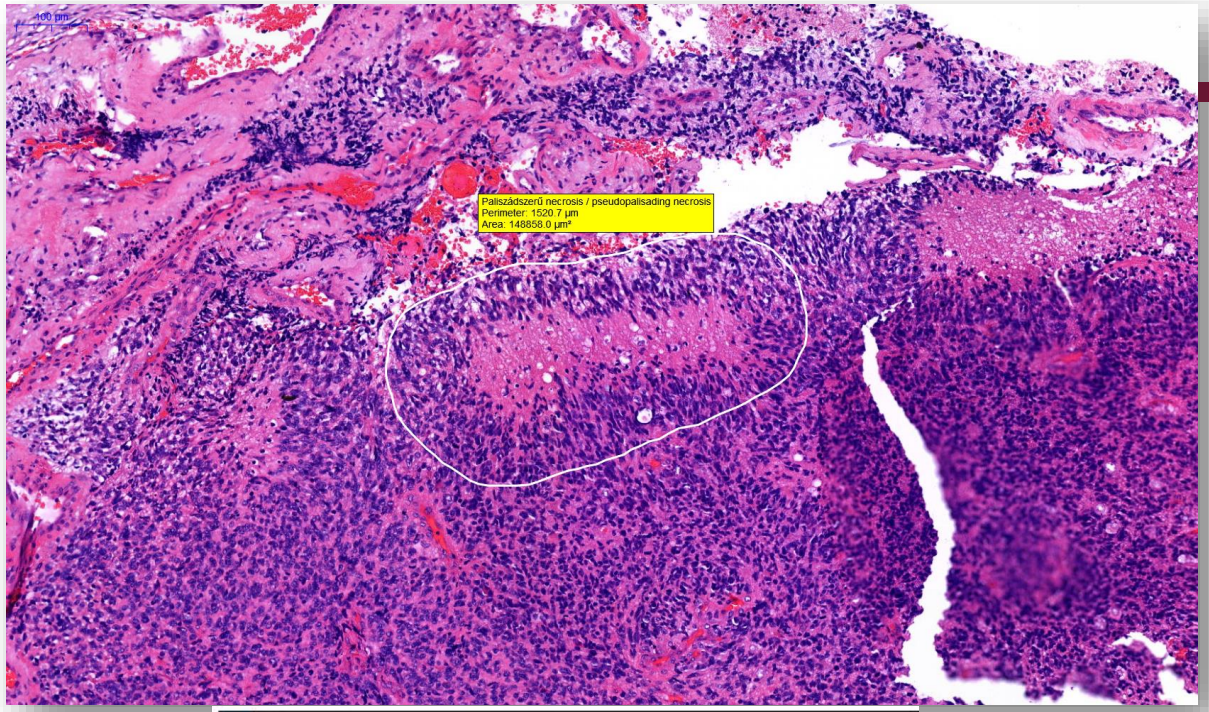


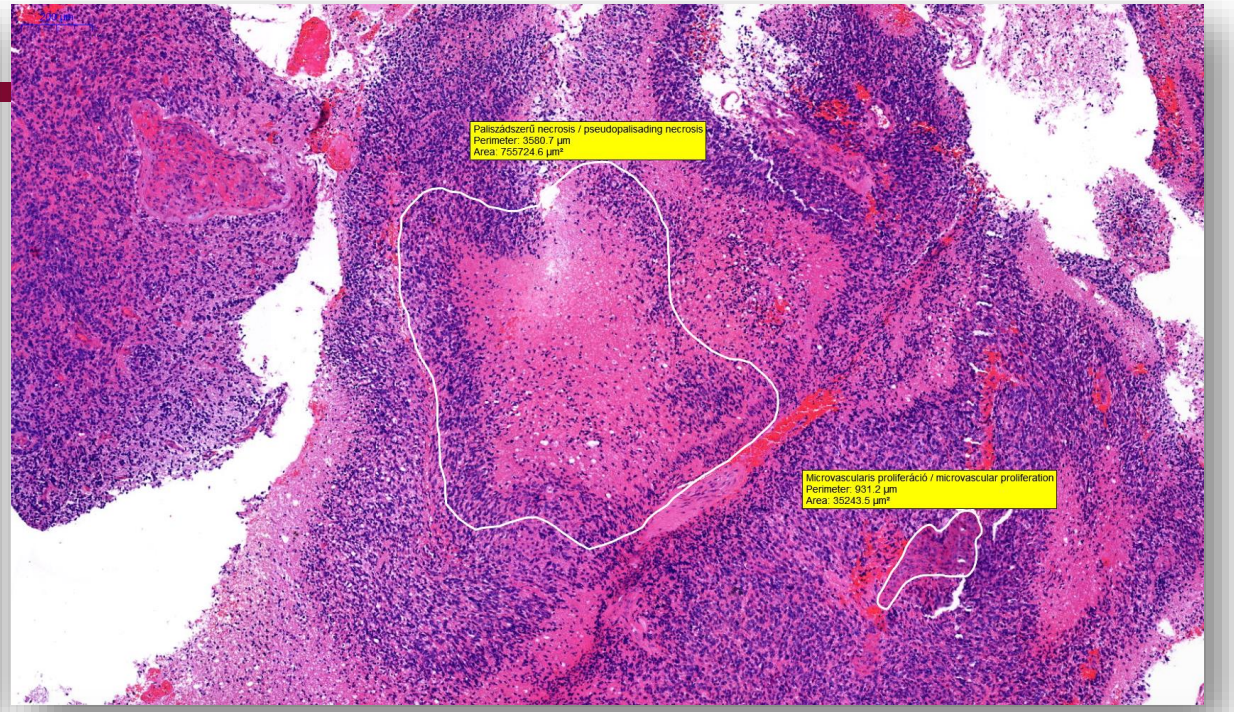


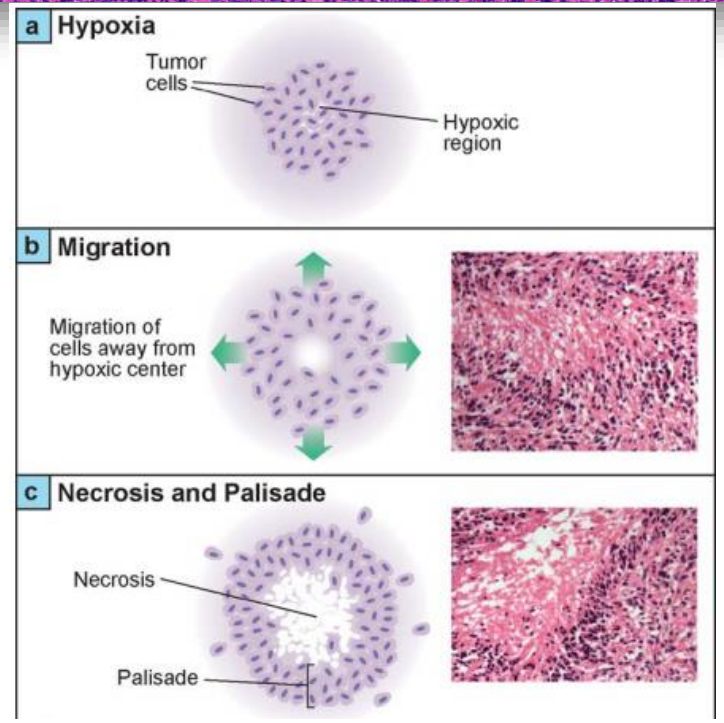

2000 µm
Glioblastoma

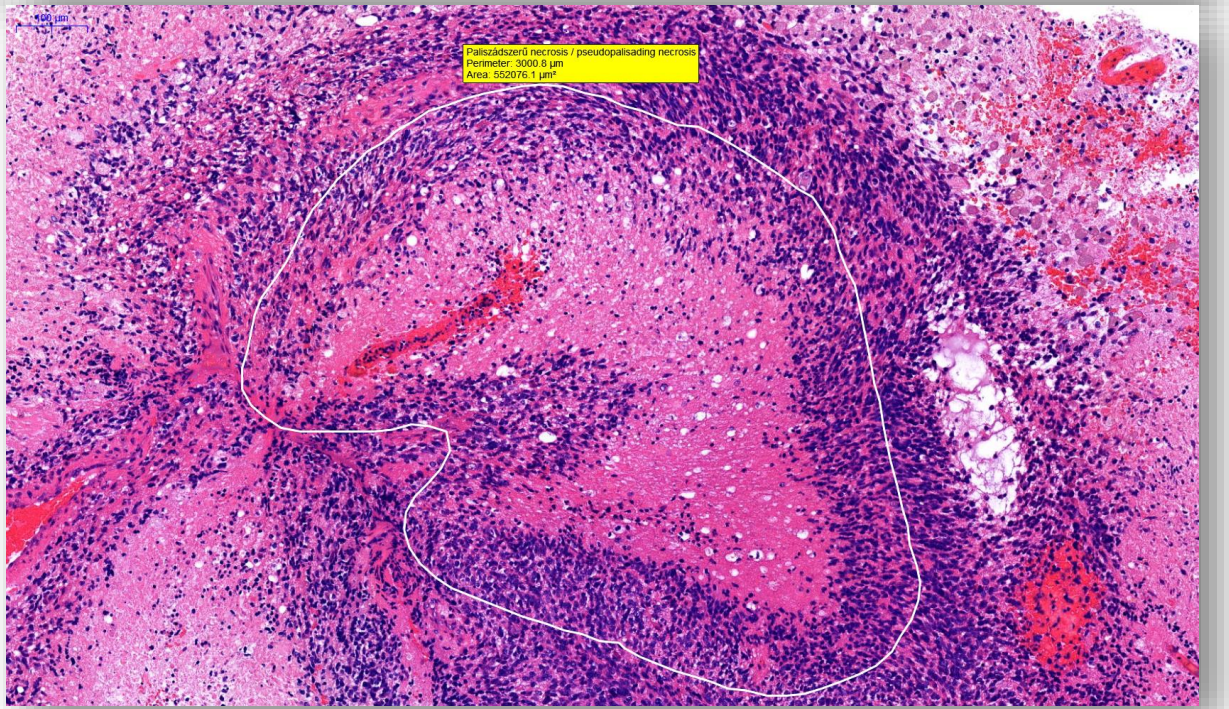

100 µm
Microvascularis proliferáció / microvascular proliferation
Perimeter: 931.2 µm
Area: 35243.5 µm²

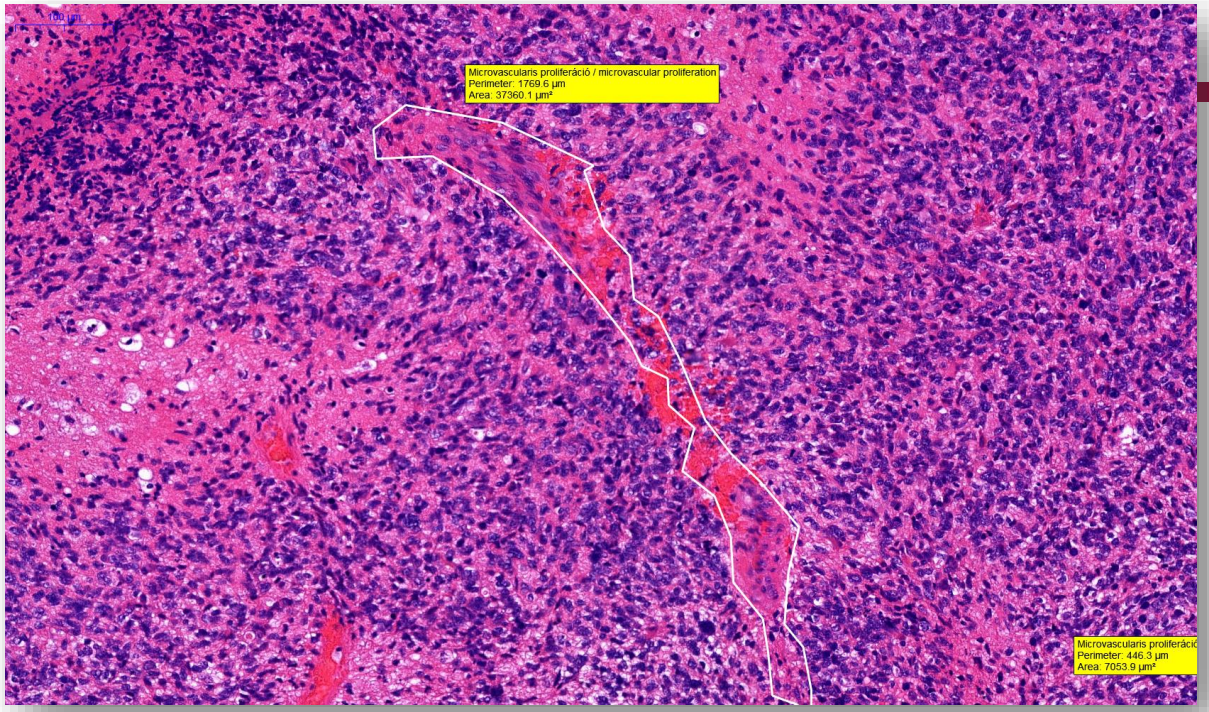

50 µm
Osztódó alak / mitotic figure
Osztódó alak / mitotic figure
Osztódó alak / mitotic figure

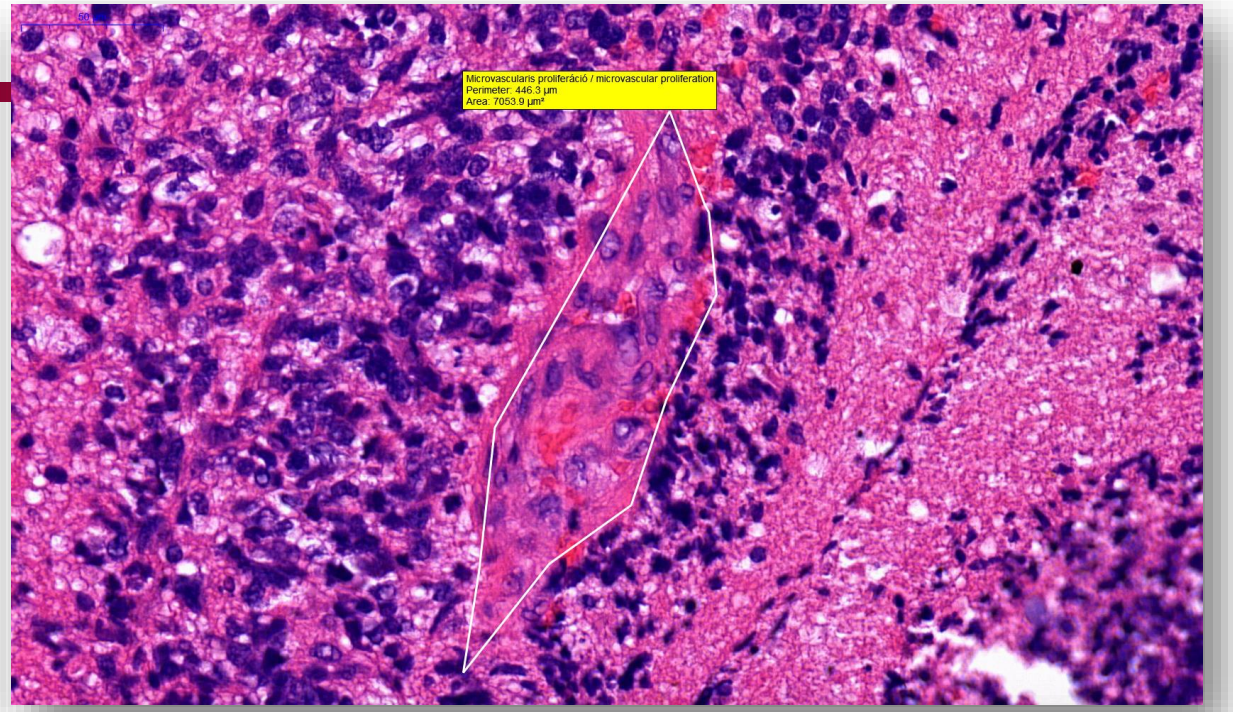

Palisádszerű necrosis / pseudopalisading necrosis
Perimeter: 1520.7 µm
Area: 148858.0 µm²

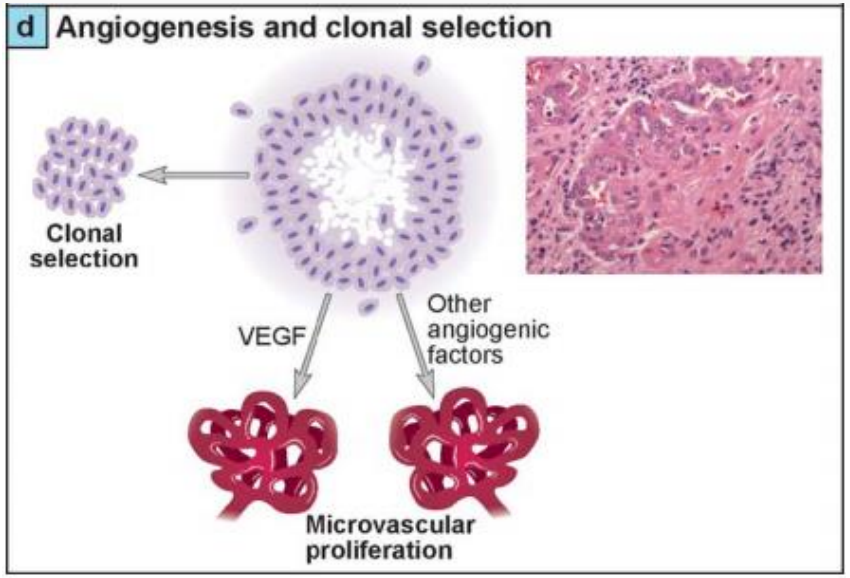

Palisádszerű necrosis / pseudopalisading necrosis
Perimeter: 3580.7 µm
Area: 755724.6 µm²
Microvascularis proliferáció / microvascular proliferation
Perimeter: 931.2 µm
Area: 35243.5 µm²

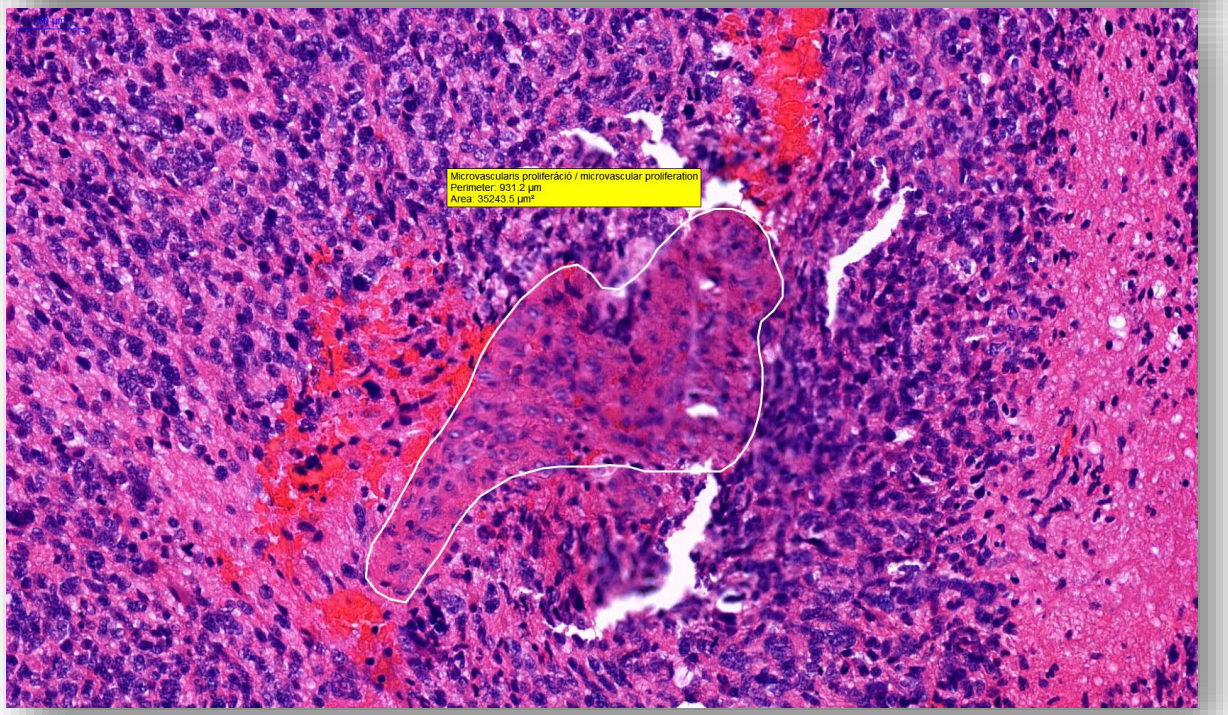

a Hypoxia
Tumor cells
Hypoxic region
b Migration
Migration of cells away from hypoxic center
c Necrosis and Palisade
Necrosis
Palisade


Palisádszerű necrosis / pseudopalisading necrosis
Perimeter: 3000.8 µm
Area: 552076.1 µm²


Microvascularis proliferáció / microvascular proliferation
Perimeter: 1769.6 µm
Area: 37360.1 µm²
Microvascularis proliferáció
Perimeter: 446.3 µm
Area: 7053.9 µm²

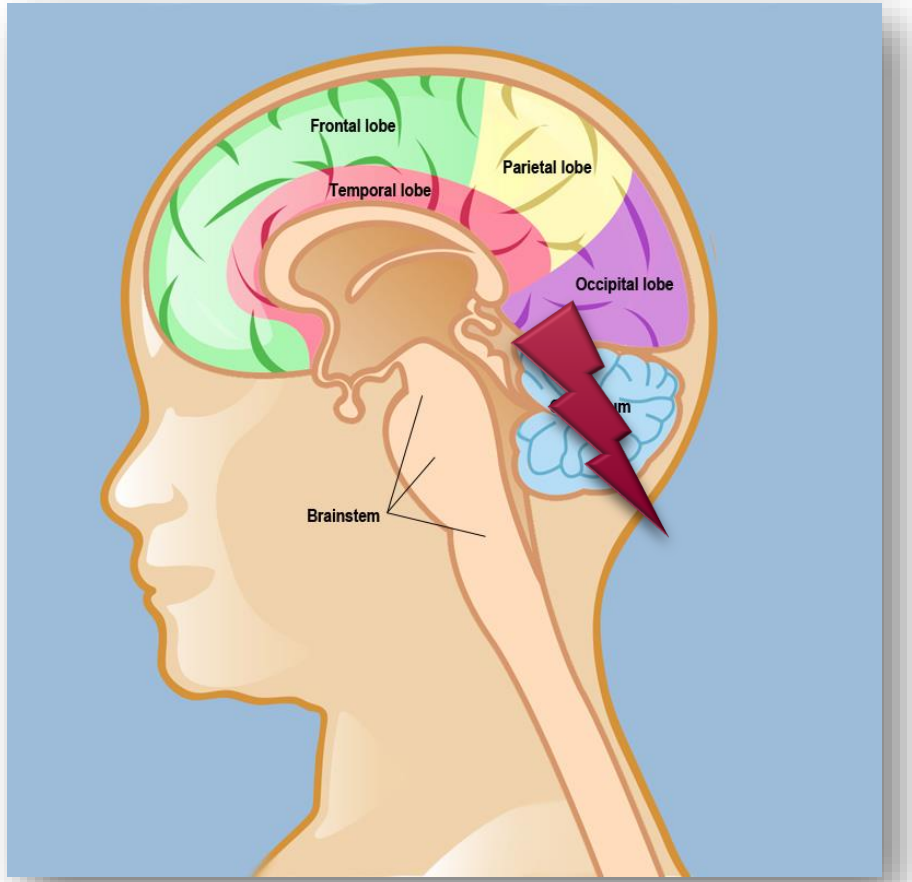

Microvascularis proliferáció / microvascular proliferation
Perimeter: 446.3 µm
Area: 7053.9 µm²


d Angiogenesis and clonal selection
Clonal selection
VEGF
Other angiogenic factors
Microvascular proliferation

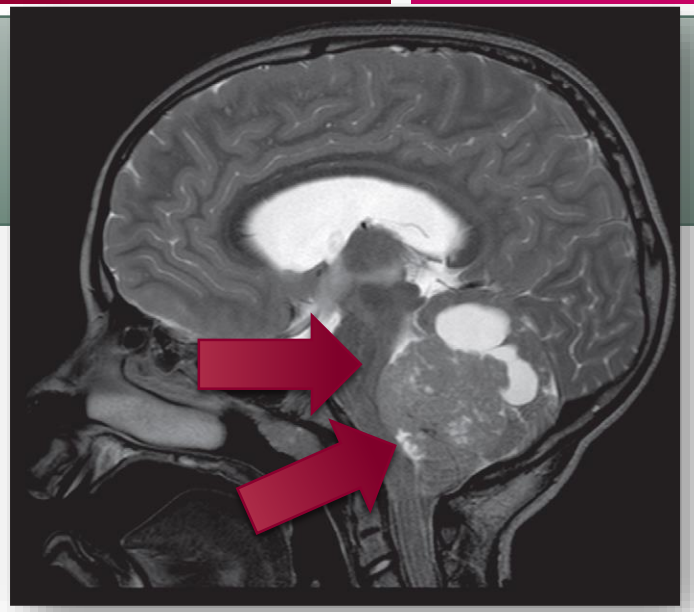

Microvascularis proliferáció / microvascular proliferation
Perimeter: 931.2 µm
Area: 35243.5 µm²

EMBRIONAL NEUROEPITHELIAL TUMORS

- Predominance in children
- Disseminate through CSF pathways
- Small undifferentiated cells
- High mitotic index, widespread apoptosis
- Potential for divergent neuroepithelial differentiation

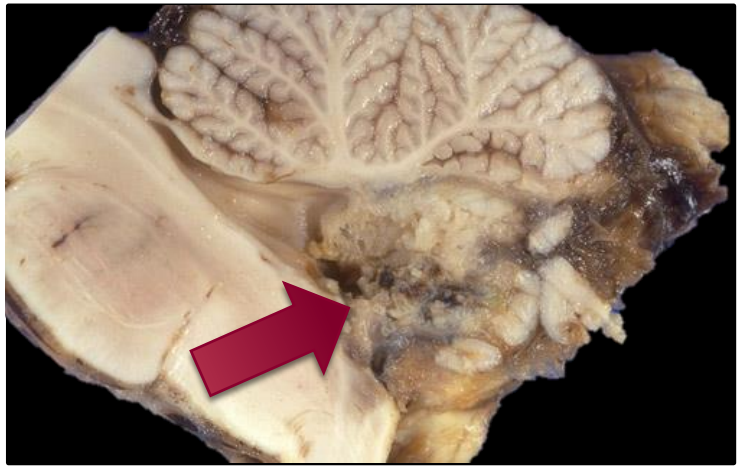


Medulloblastoma Grade IV

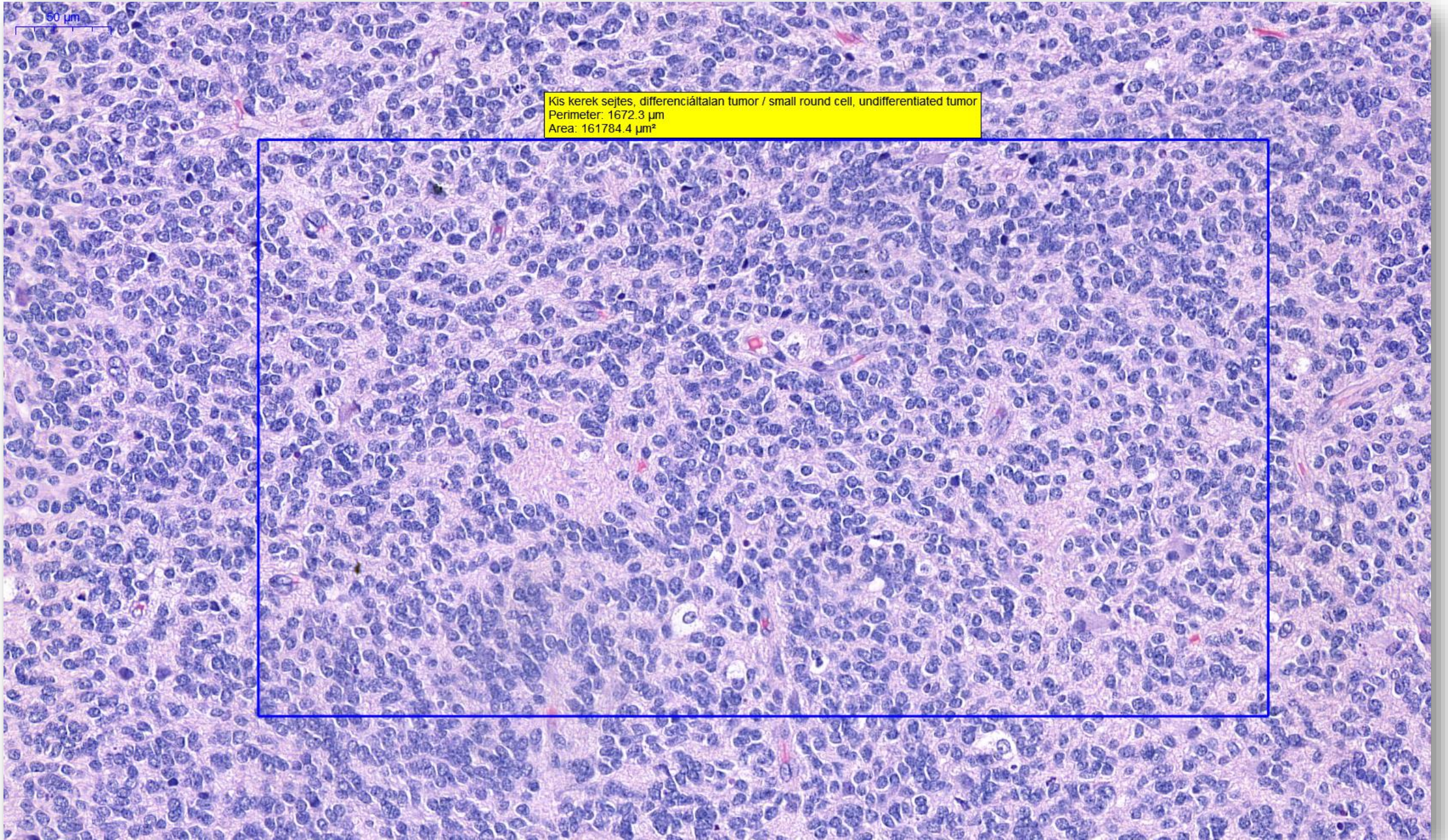


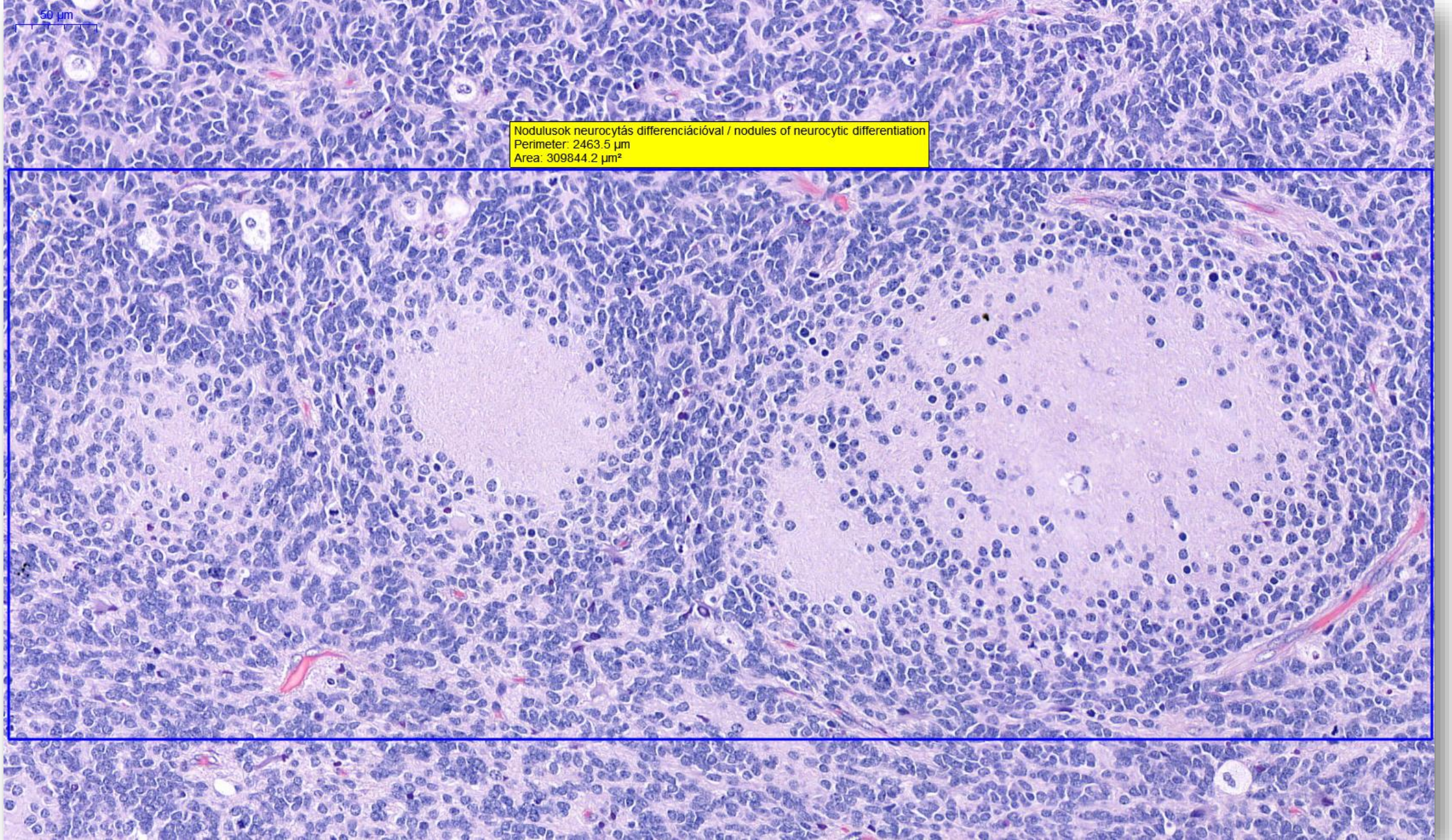
- 20% of pediatric brain tumor
- Infratentorial, 4th ventricle

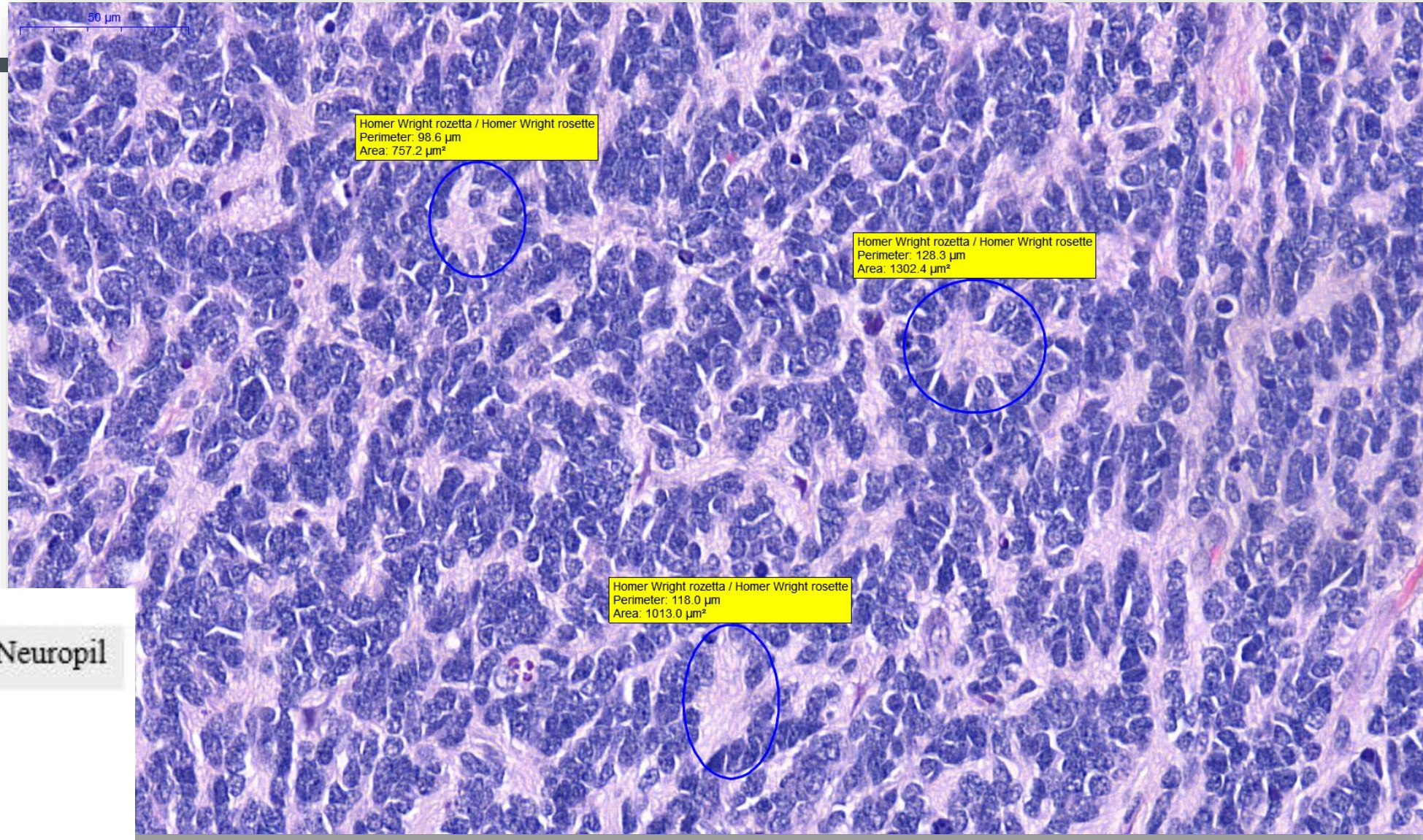
- Four molecular subgroups :
  - WNT- activated (10%)
  - Sonic hedgehog (SHH)-activated (30%)
  - Group 3 (20%)
  - Group 4 (40%)

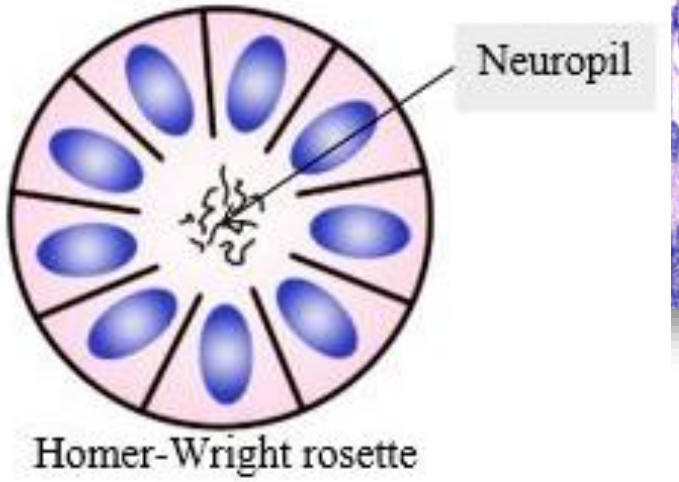


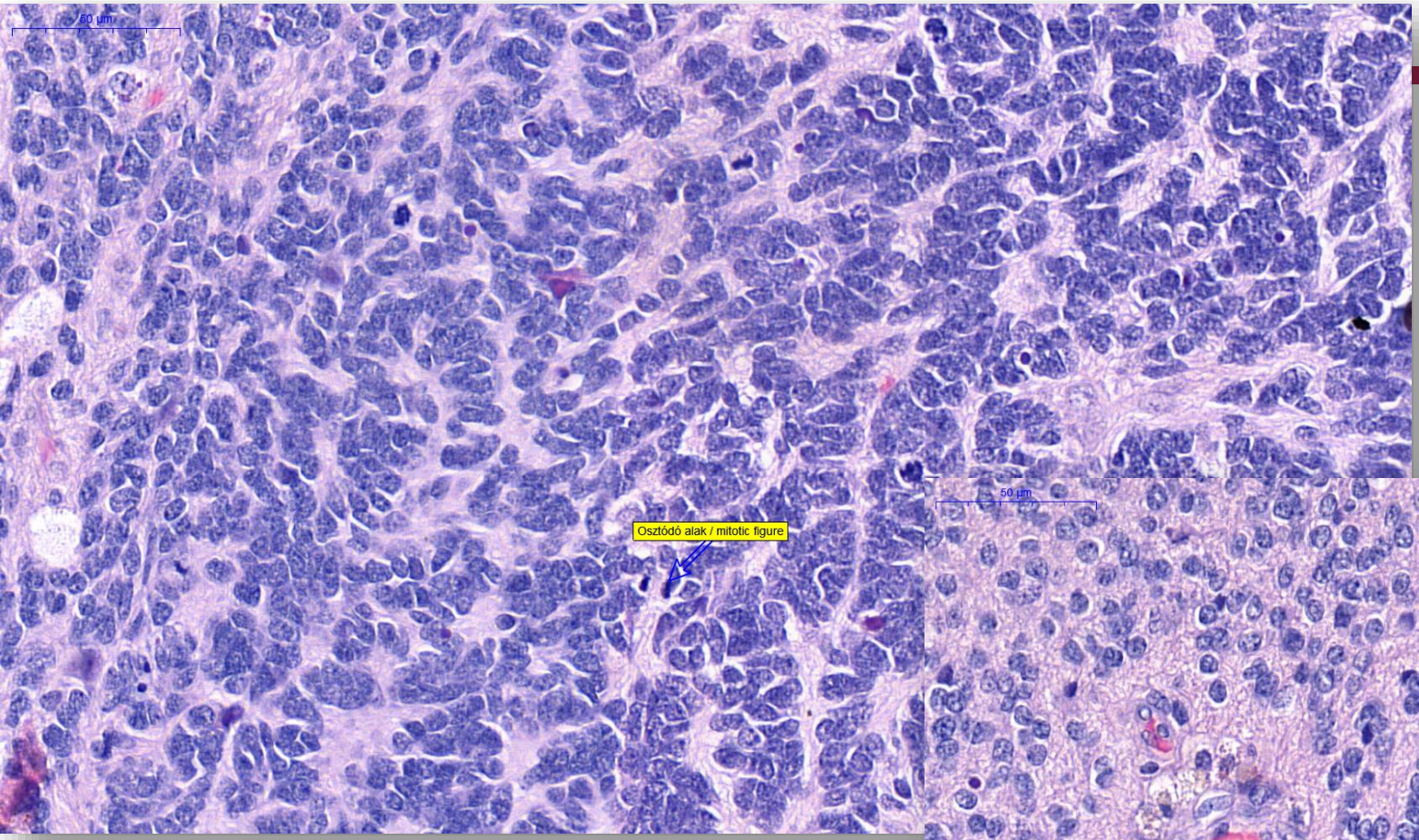

5000 µm

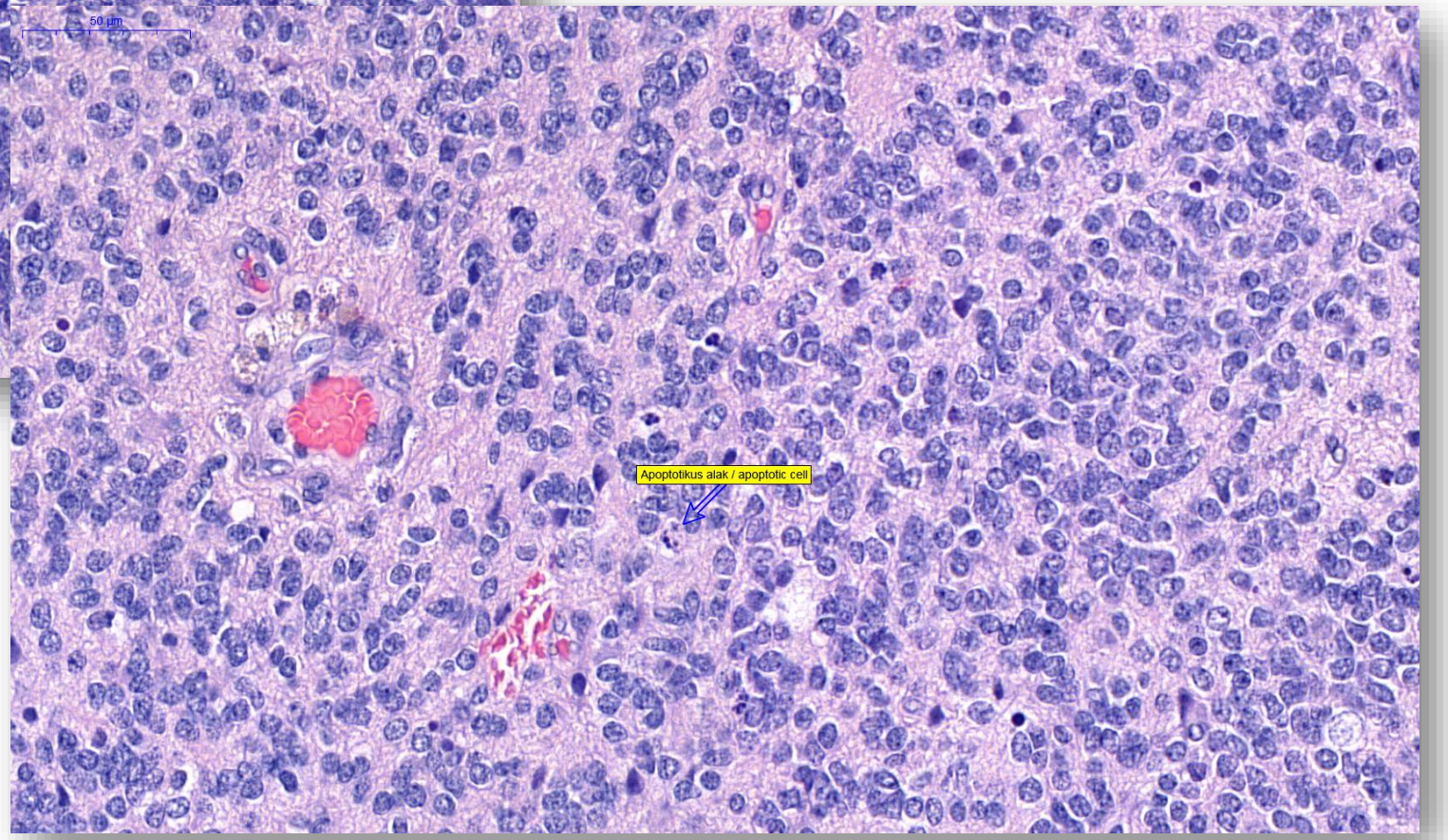

50 µm
Kis kerek sejtes, differenciáltalan tumor / small round cell, undifferentiated tumor
Perimeter: 1672.3 µm
Area: 161784.4 µm²


50 µm
Nodulusok neurocytás differenciációval / nodules of neurocytic differentiation
Perimeter: 2463.5 µm
Area: 309844.2 µm²

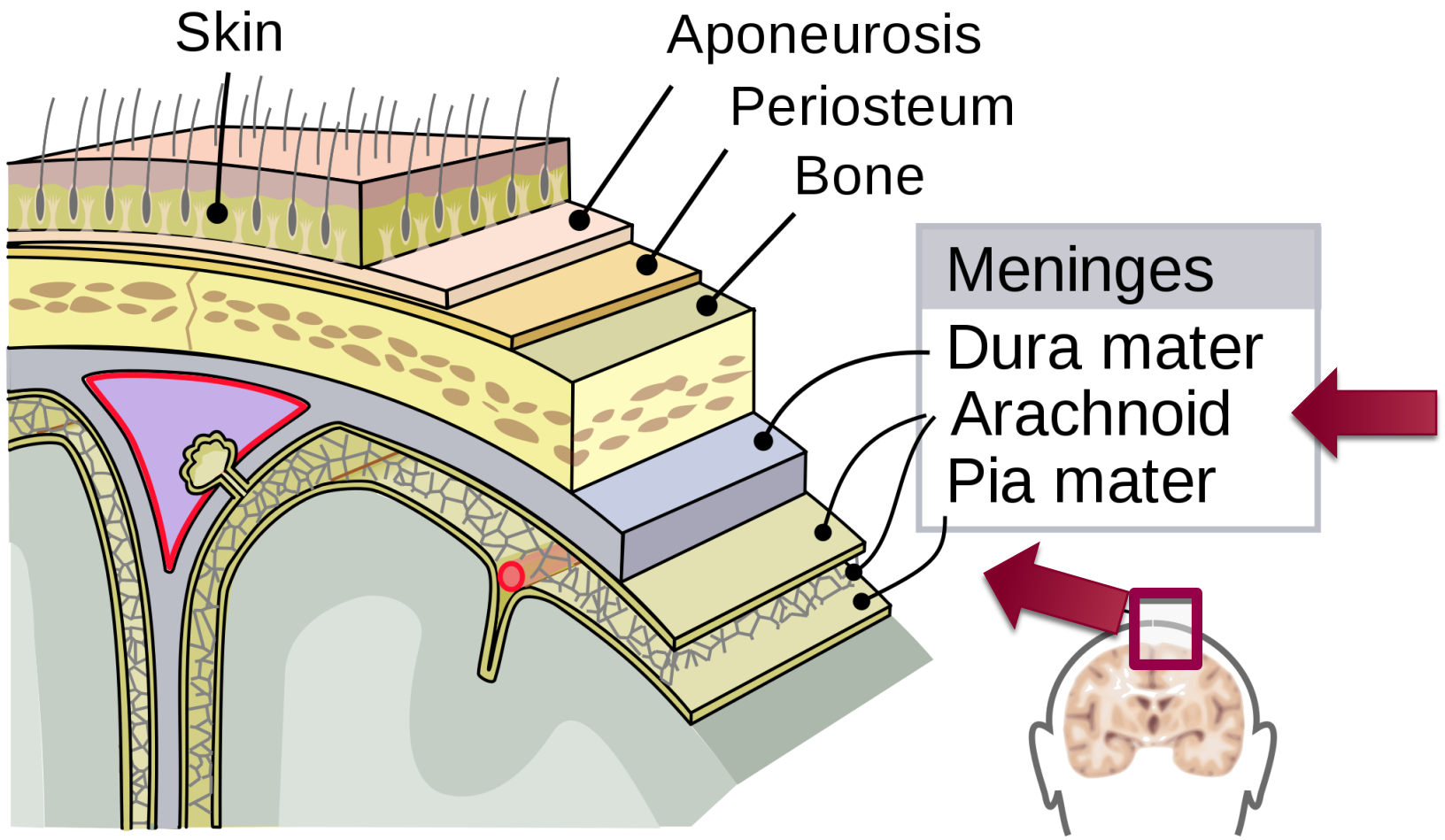

50 µm
Homer Wright rozetta / Homer Wright rosette
Perimeter: 98.6 µm
Area: 757.2 µm²
Homer Wright rozetta / Homer Wright rosette
Perimeter: 128.3 µm
Area: 1302.4 µm²
Homer Wright rozetta / Homer Wright rosette
Perimeter: 118.0 µm
Area: 1013.0 µm²


Neuropil
Homer-Wright rosette


50 µm
Osztódó alak / mitotic figure

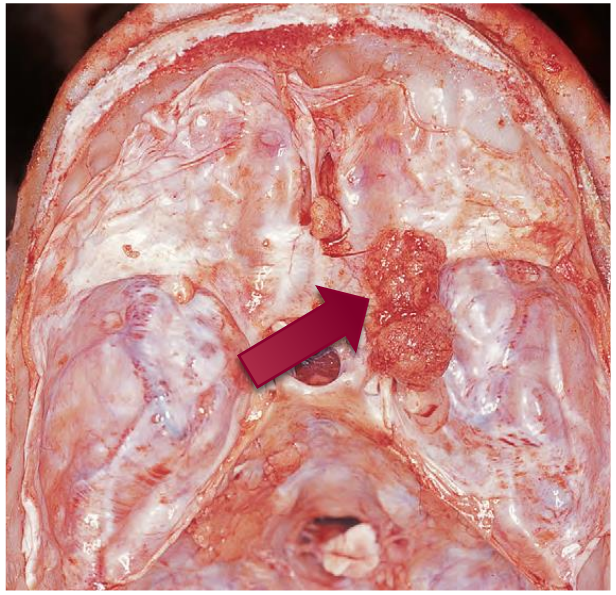

50 µm
Apoptotikus alak / apoptotic cell

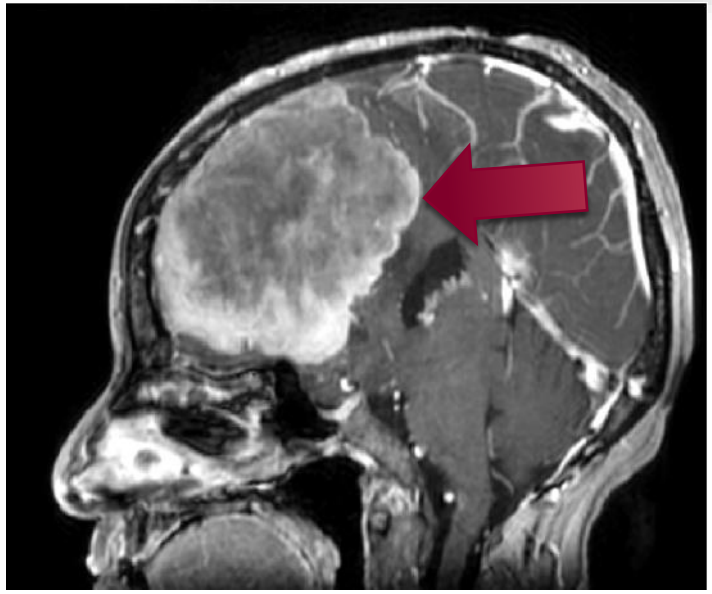
V. MENINGIOMAS

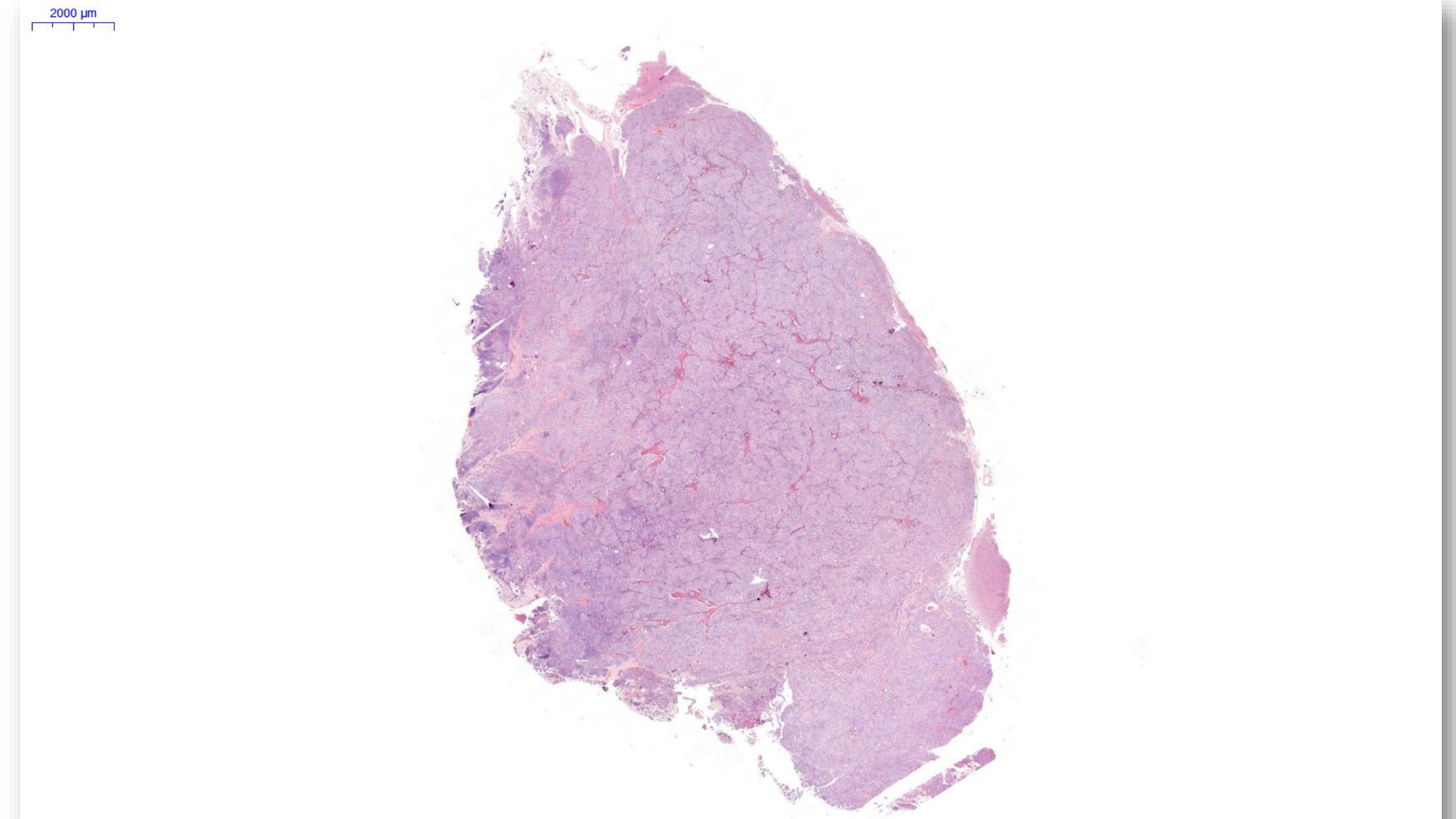


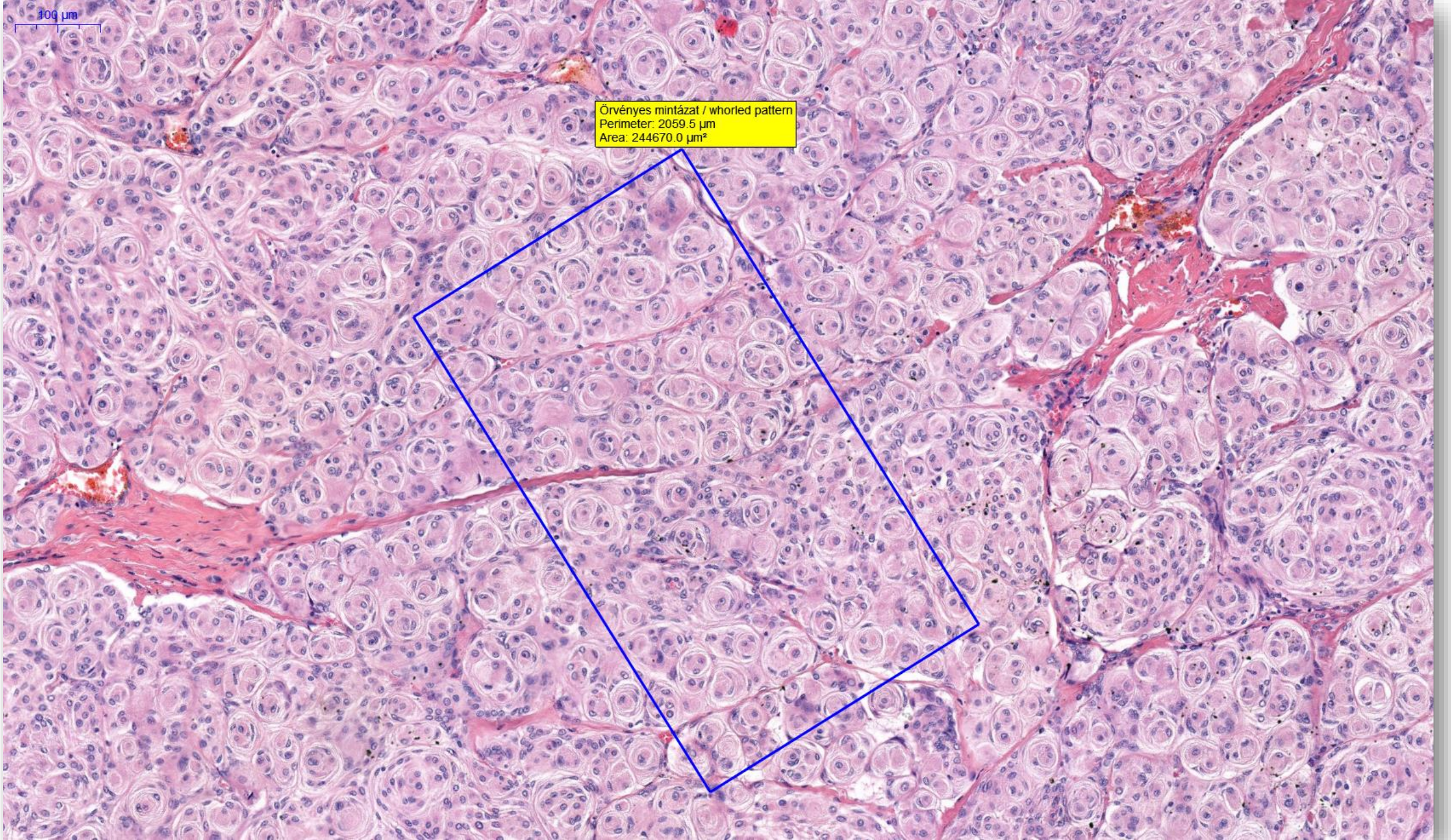
Meningeoma Grade I.

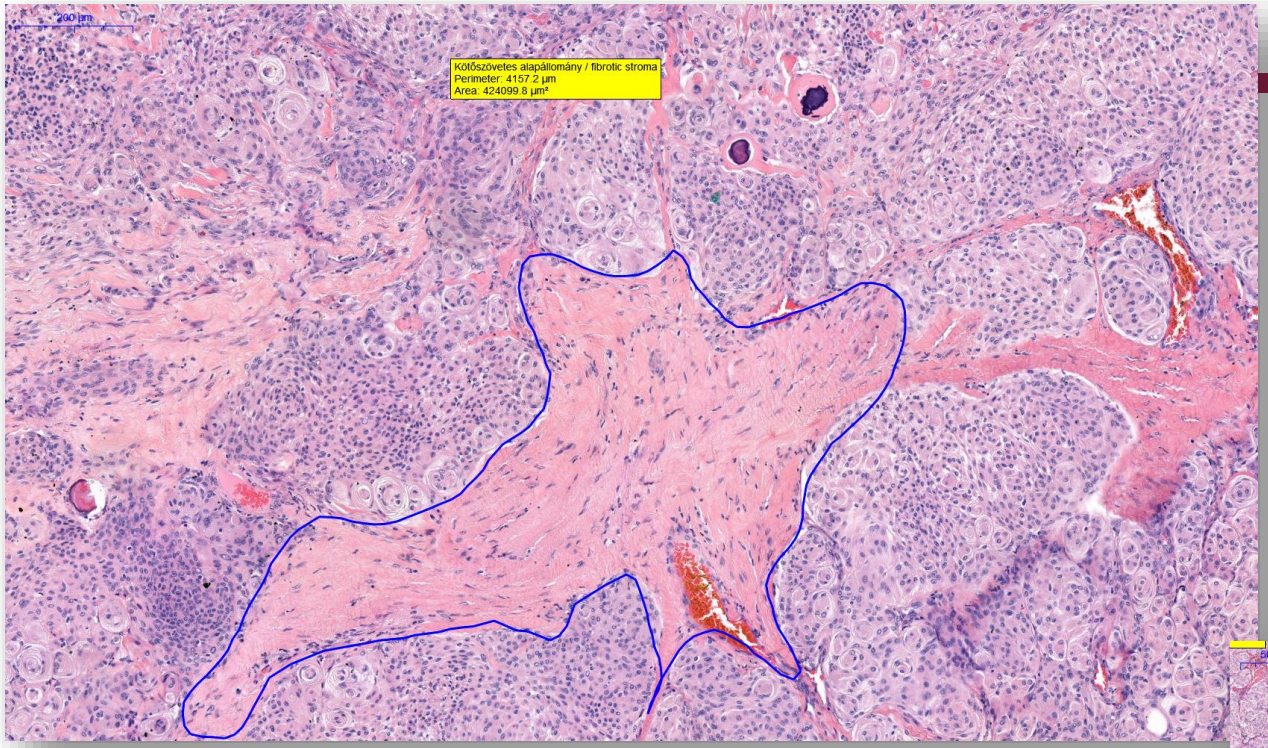
- Incidence increases with age
- Primary CNS tumors ~30% meningioma
- External surfaces or intraventricular (Rare)
- Focal neurological deficits
- Several histological variants

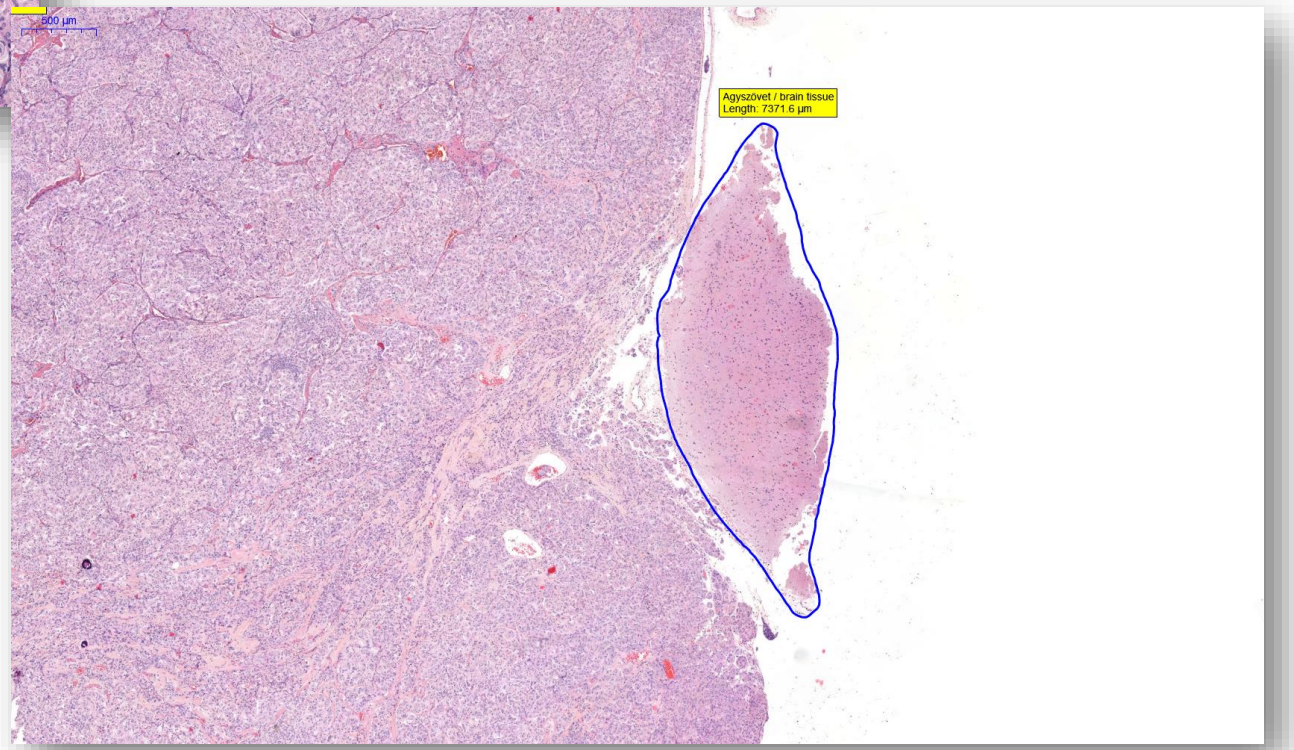





2000 µm

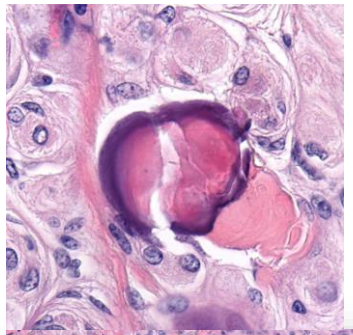

100 µm
Örvényes mintázat / whorled pattern
Perimeter: 2059.5 µm
Area: 244670.0 µm²


200 µm
Kötőszövetes alapállomány / fibrotic stroma
Perimeter: 4157.2 µm
Area: 424099.8 µm²

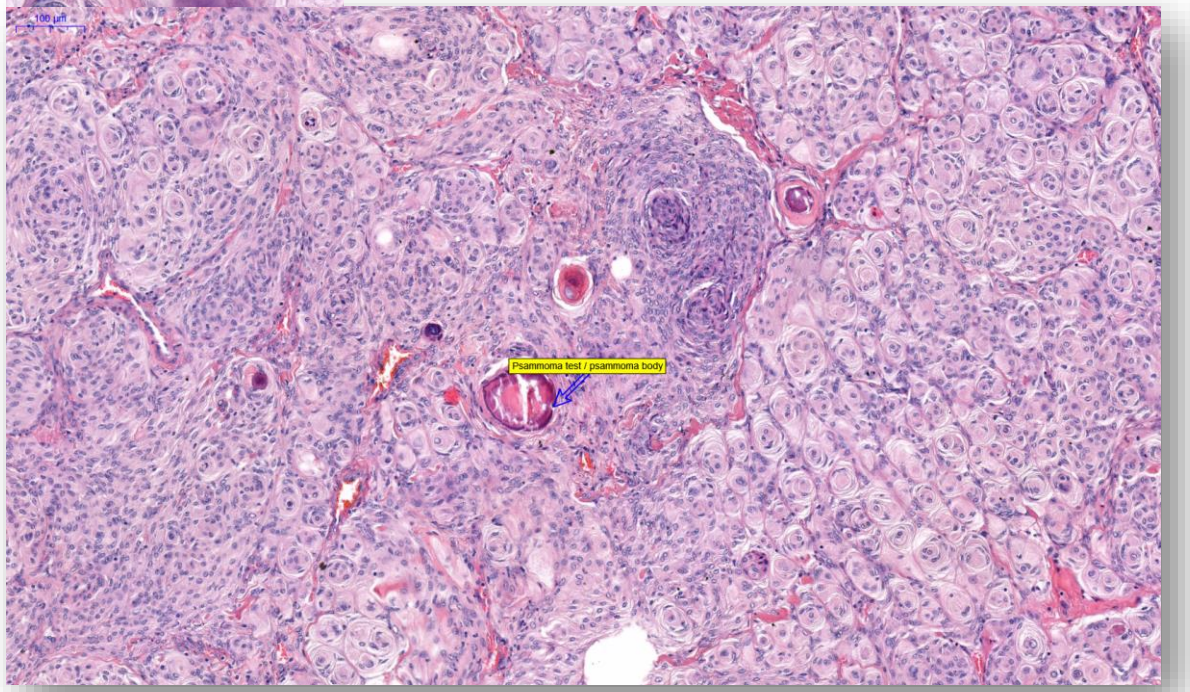

500 µm
Agyszövet / brain tissue
Length: 7371.6 µm

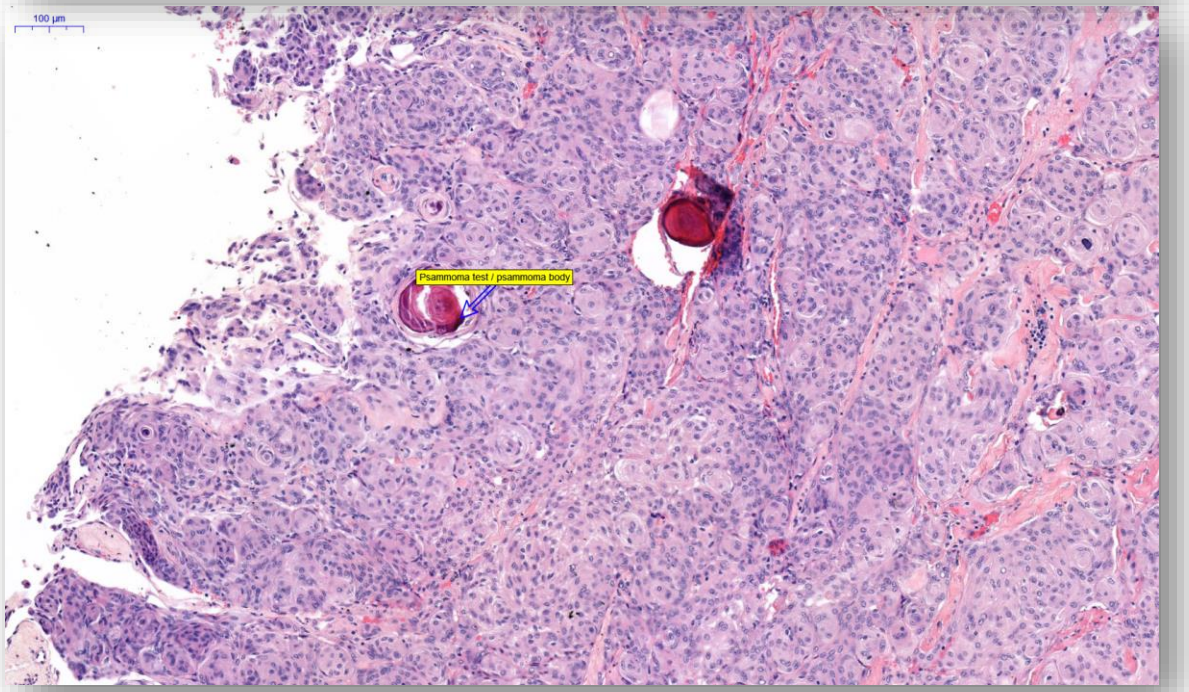
Meningioma

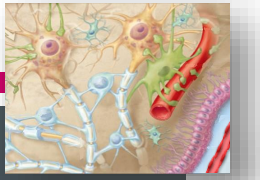
- Grade I. – Common
- Grade II. – Mitosis - 4/10HPF
- Grade III. – 20/10HPF



Psammoma body



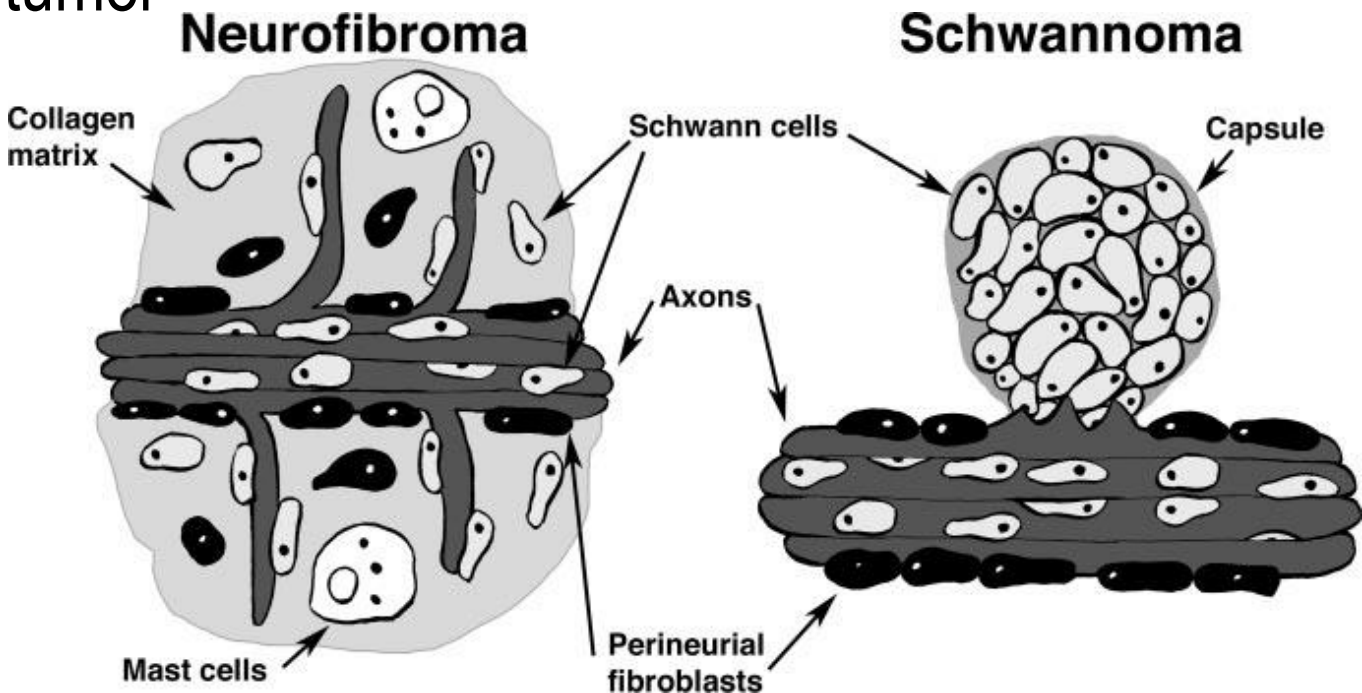




TUMORS OF THE PERIPHERAL NERVOUS SYSTEM

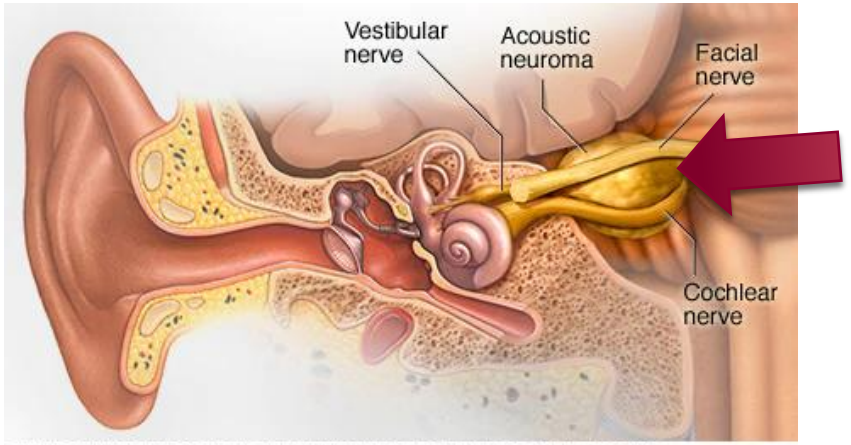
Peripheral nerve sheath tumors

- Schwannoma
- Neurofibroma
- Malignant peripheral nerve sheath tumor

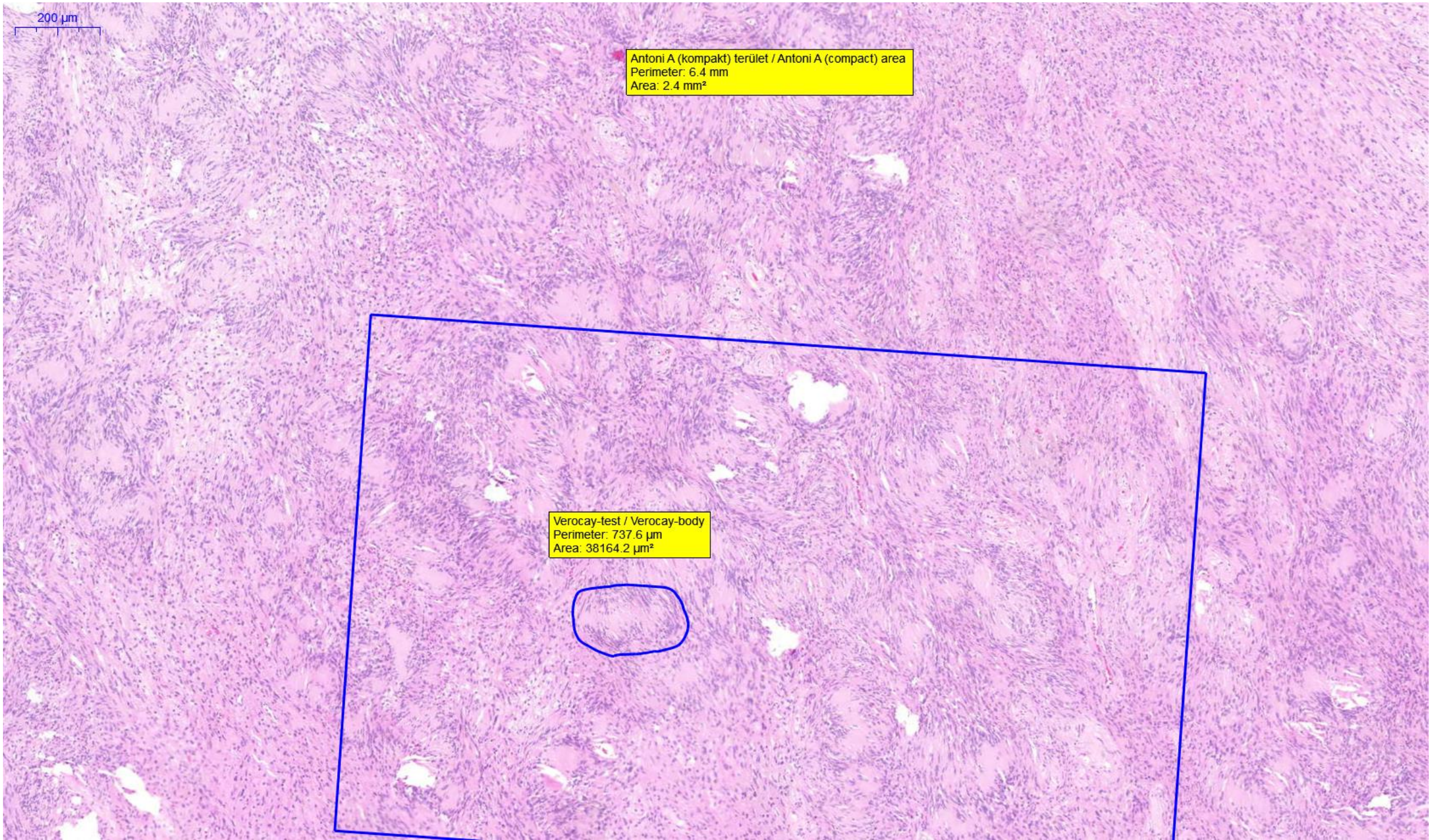


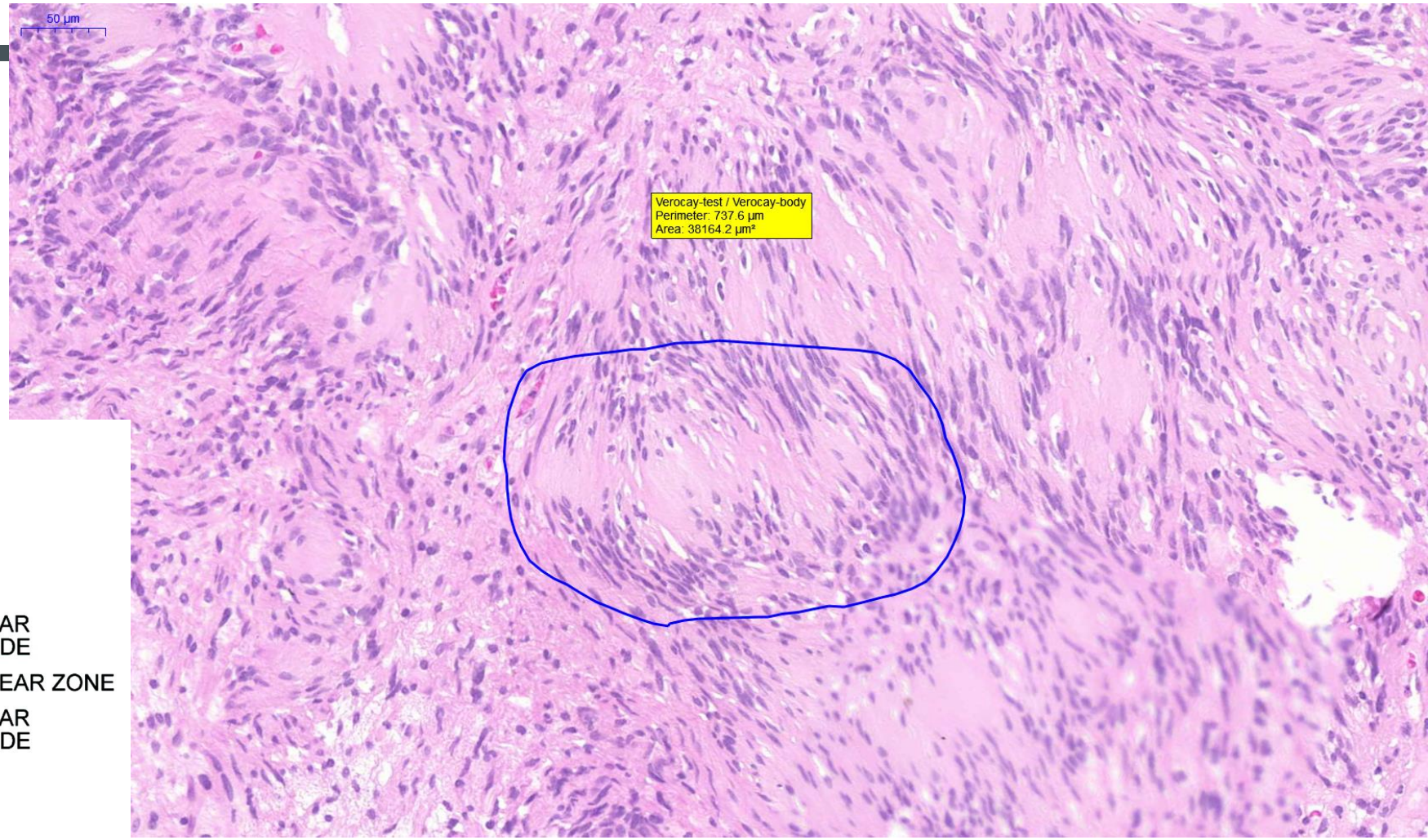
Schwannoma

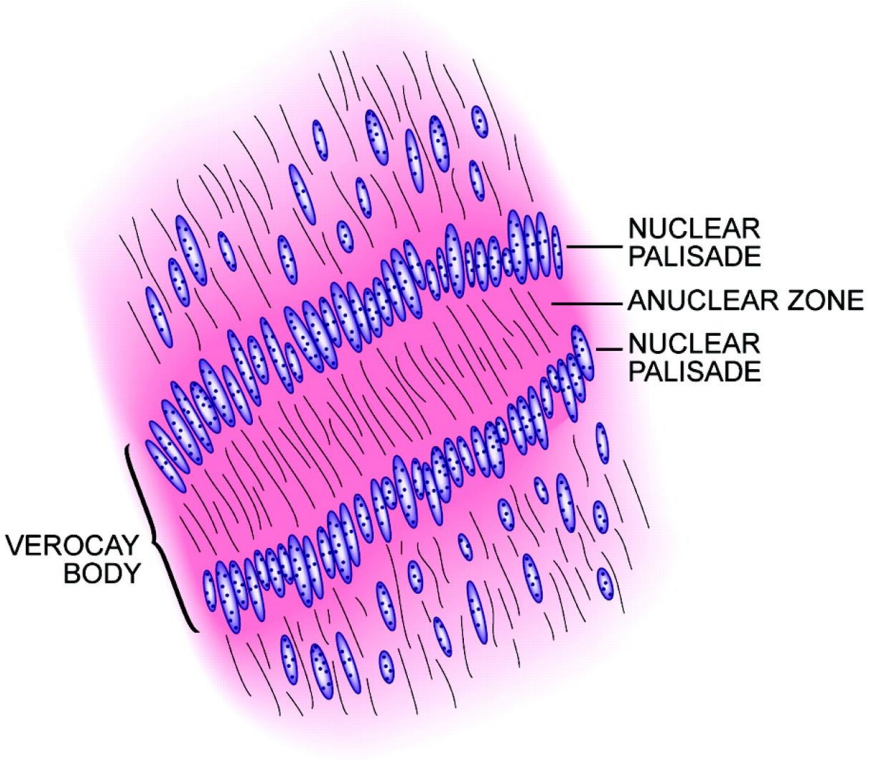
- Sporadic
- 10% NF2 associated
- Spinal chord – Peripheral nerves – Compression
- Cranial nerves – Vestibular nerve – Hearing loss
- Histology
  - Antoni A area – Cellular, Verocay-body
  - Antoni B area – Loose, Paucicellular

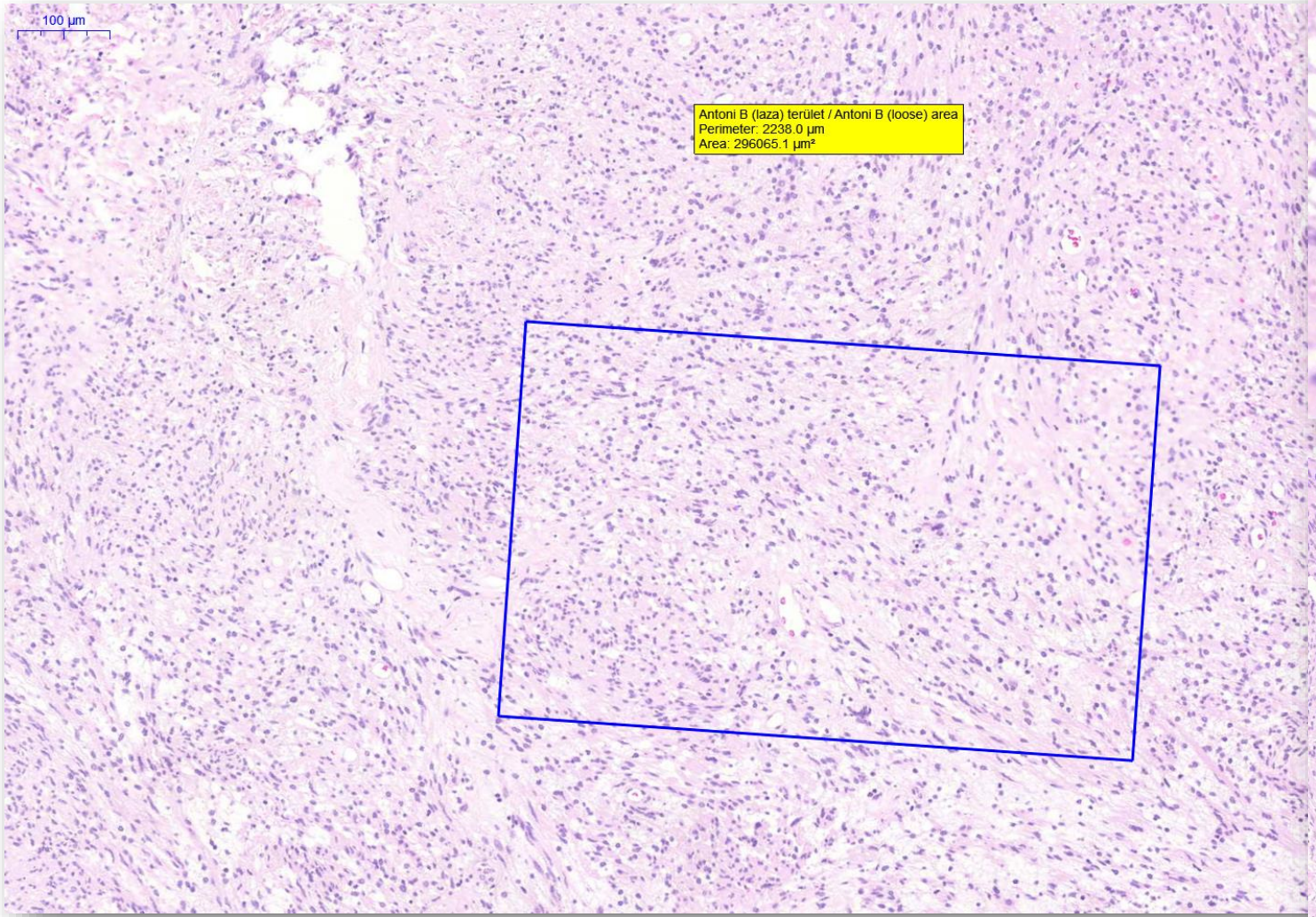


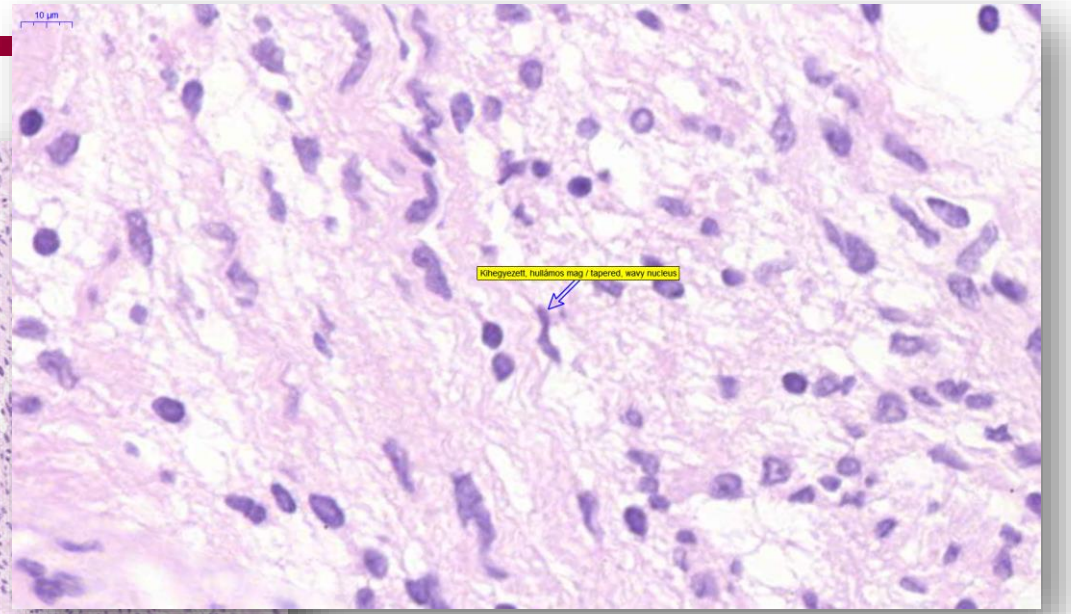

2000 µm

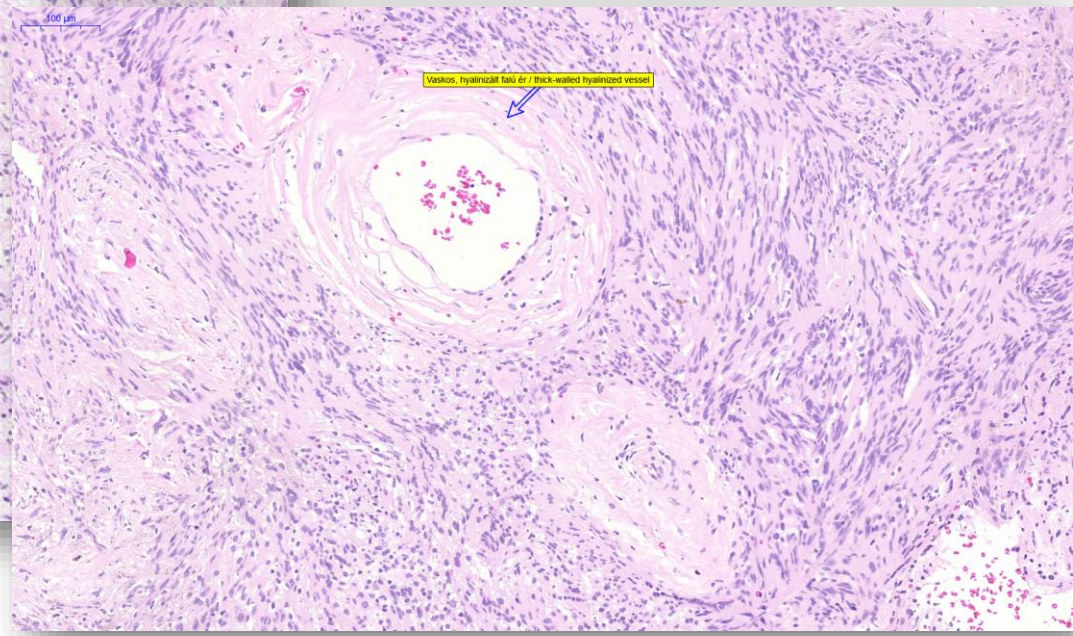

200 µm
Antoni A (kompakt) terület / Antoni A (compact) area
Perimeter: 6.4 mm
Area: 2.4 mm²
Verocay-test / Verocay-body
Perimeter: 737.6 µm
Area: 38164.2 µm²


50 µm
Verocay-test / Verocay-body
Perimeter: 737.6 µm
Area: 38164.2 µm²

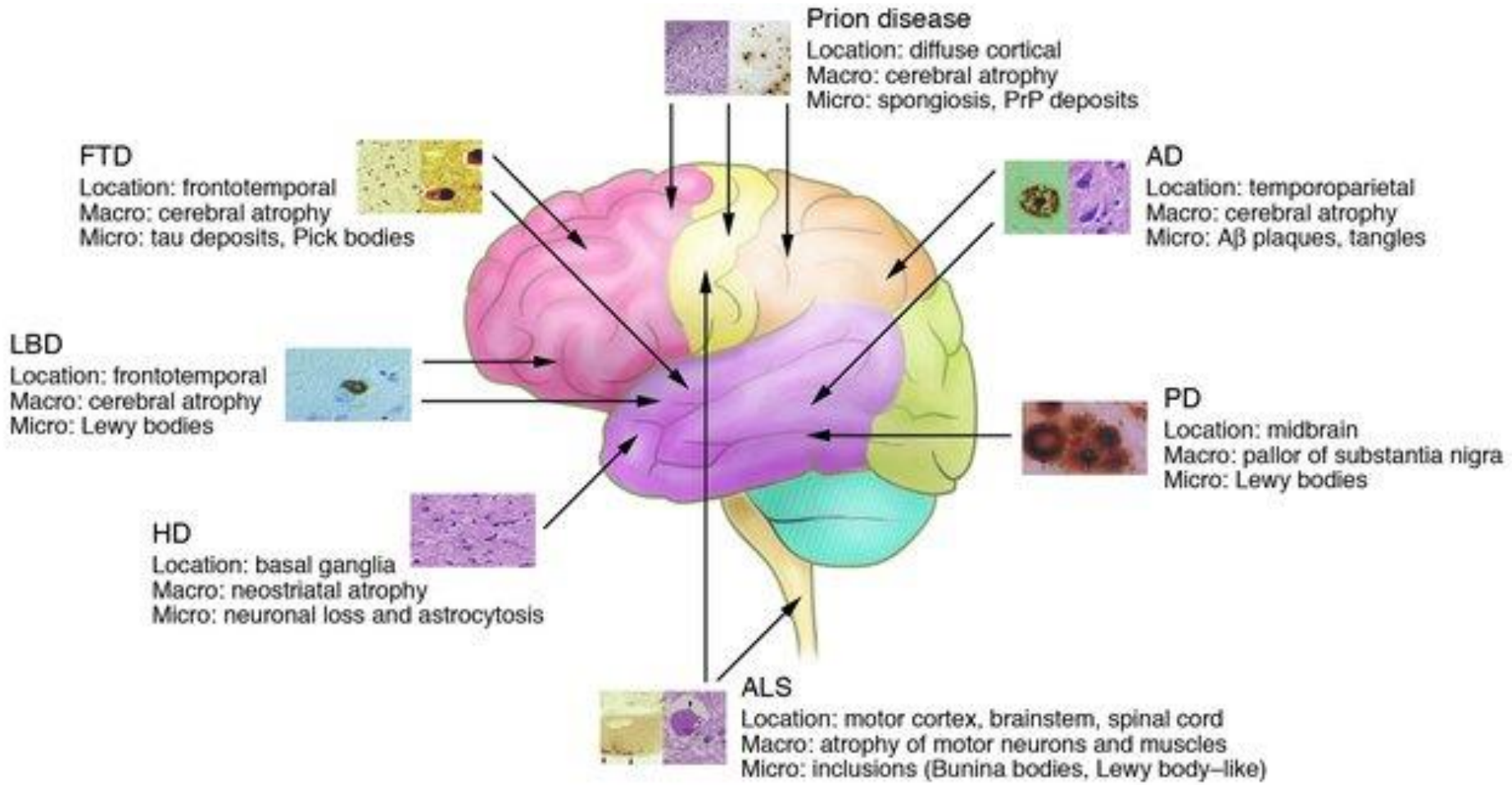

NUCLEAR PALISADE
ANUCLEAR ZONE
NUCLEAR PALISADE
VEROCAY BODY


100 µm
Antoni B (laza) terület / Antoni B (loose) area
Perimeter: 2238.0 µm
Area: 296065.1 µm²

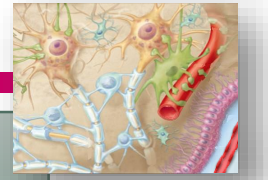

10 µm
Kihegyezett, hullámos mag / tapered, wavy nucleus


100 µm
Vaskos, hyalinizált falú ér / thick-walled hyalinized vessel

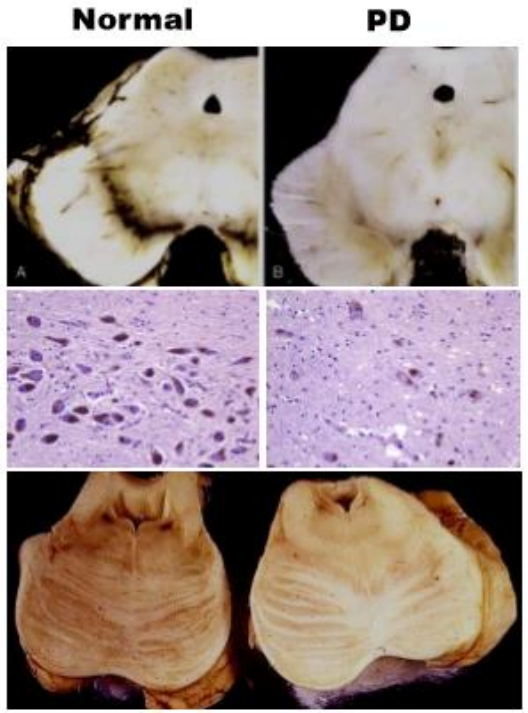
NEURODEGENERATIVE DISORDERS



Parkinson Disease (PD)

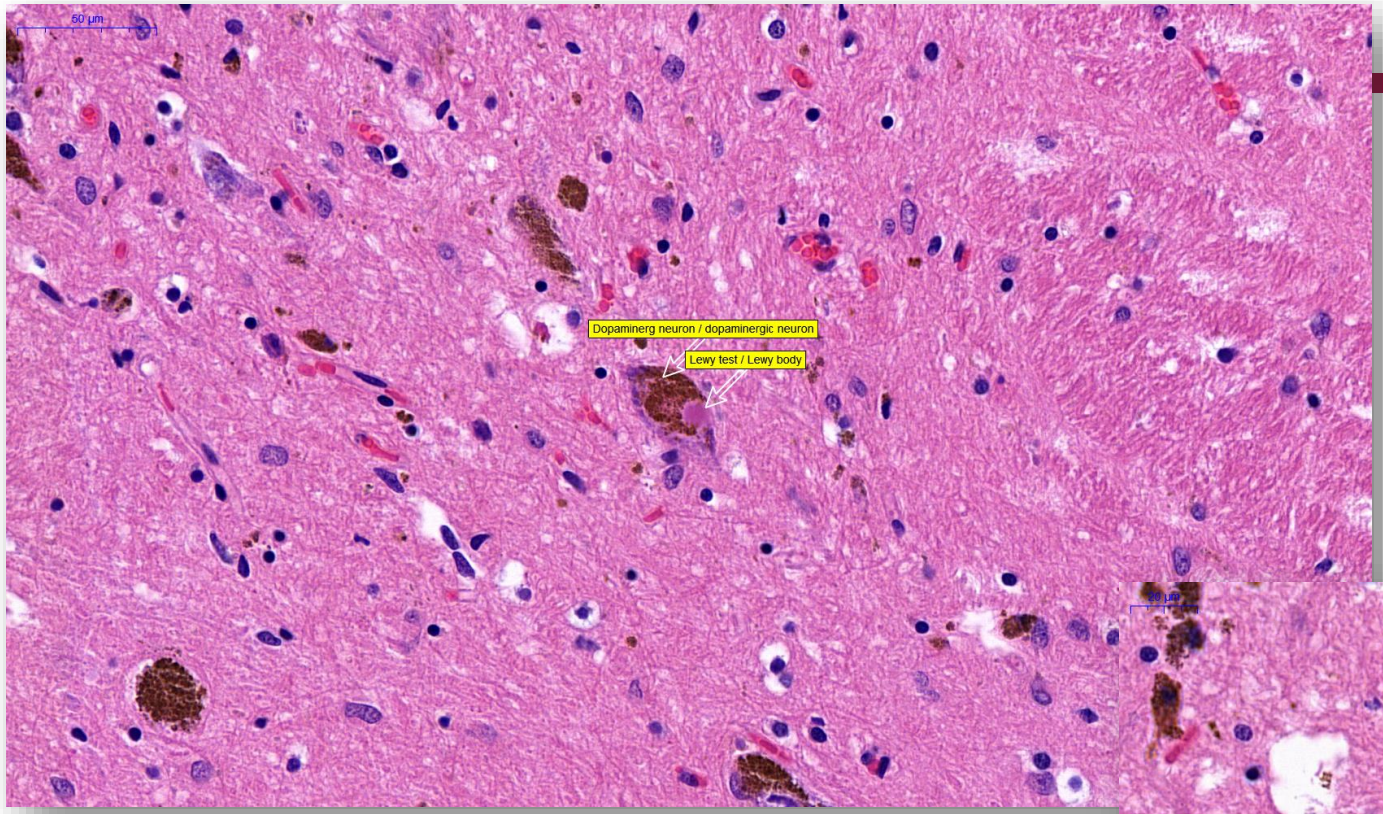


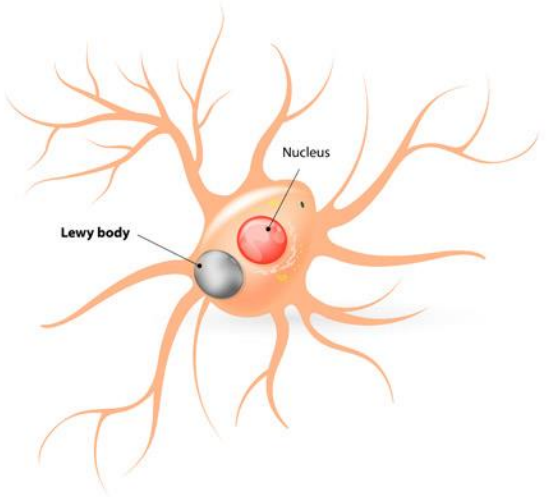
- Common (10-20 new case/100 000/y)
- After 60 ys (40-70 ys)
- Loss of dopaminergic neurons
- Specific movement symptoms: tremor, rigidity, bradykinesia, instability
- +/- Dementia
- Autonomic dysfunction and behavioral disorders often present in advance motor problems
- Types: - Sporadic
  - Familiar (AD/AR)

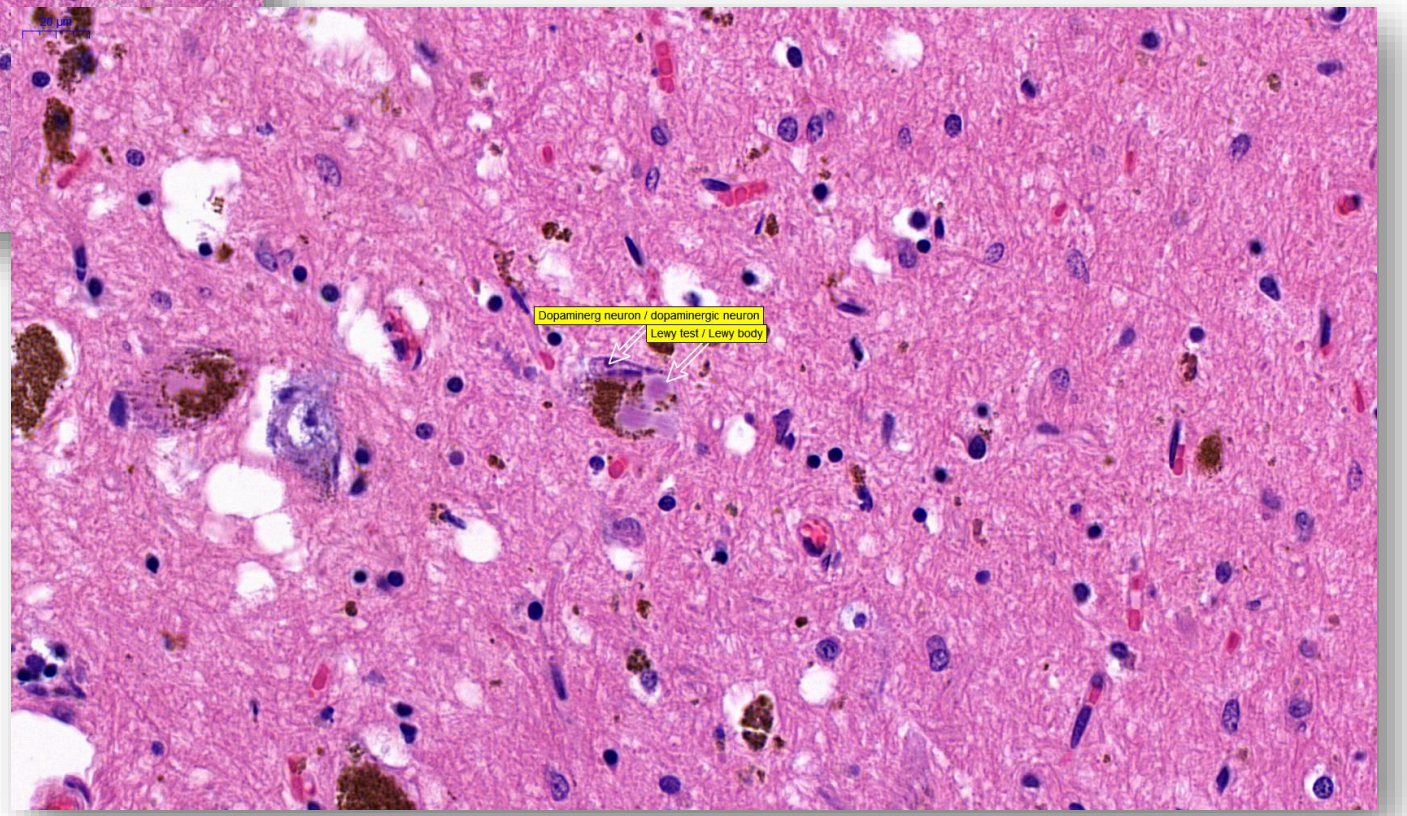


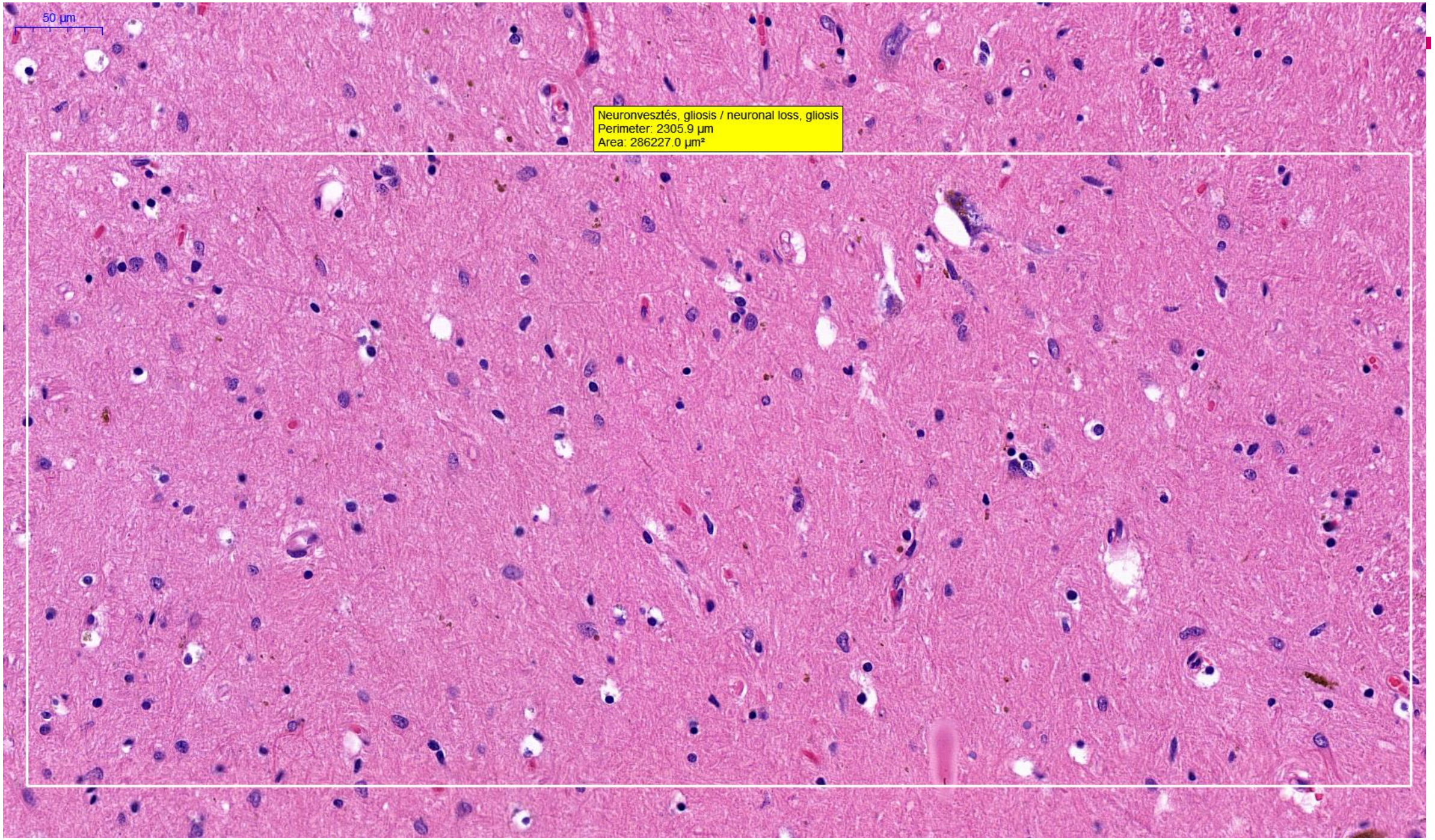

2000 µm
Substantia nigra

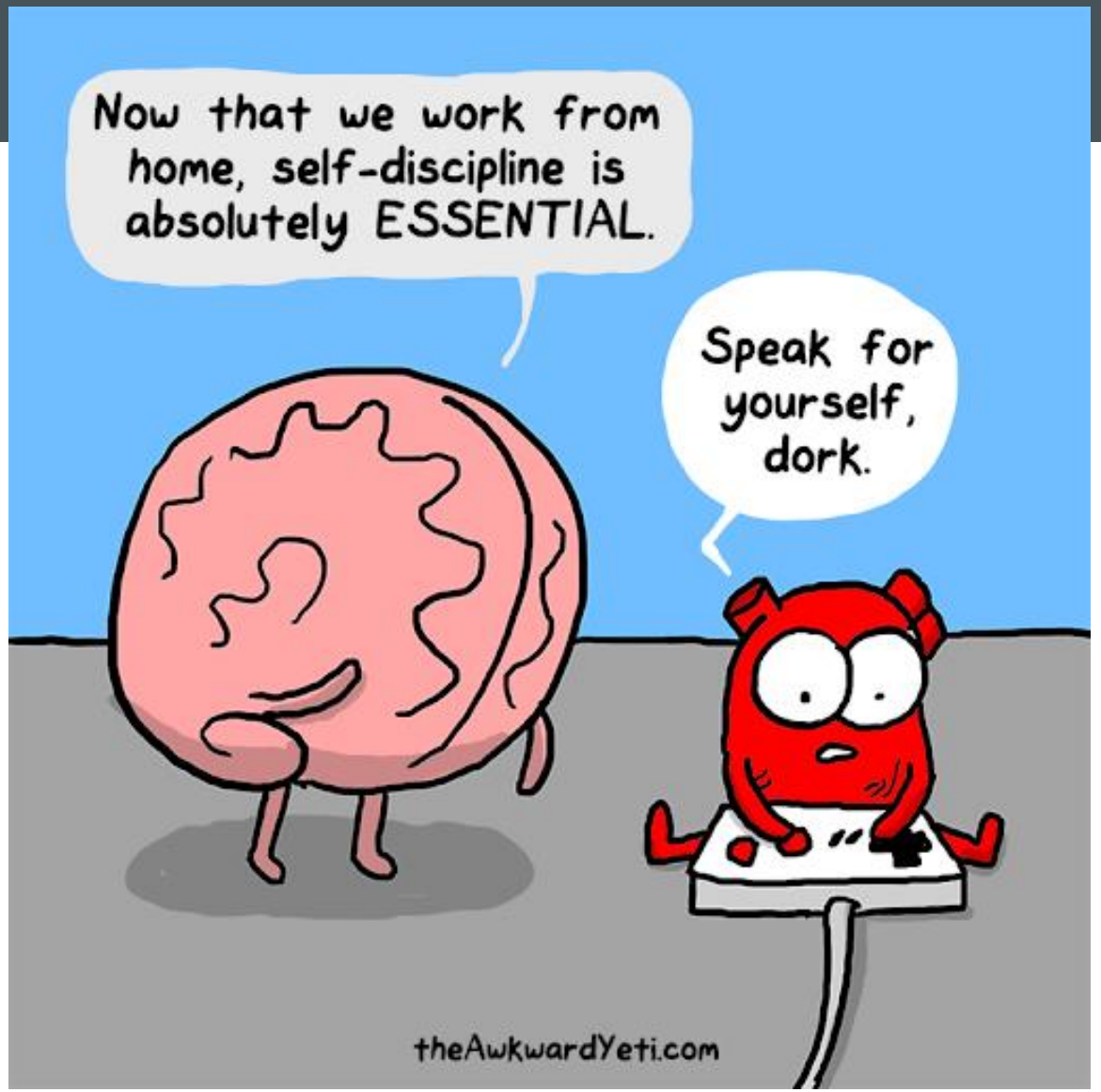

1000 µm
Substantia nigra
Perimeter: 21.5 mm
Area: 17.1 mm²
Neuronvesztés, gliosis / neuronal loss, gliosis
Perimeter: 2305.9 µm
Area: 286227.0 µm²
Dopamine Lewy test / Lewy body ic neuron
Dopamine Lewy test / Lewy body ic neuron


50 µm
Dopaminerg neuron / dopaminergic neuron
Lewy test / Lewy body


Nucleus
Lewy body


50 µm
Dopaminerg neuron / dopaminergic neuron
Lewy test / Lewy body


50 µm
Neuronvesztés, gliosis / neuronal loss, gliosis
Perimeter: 2305.9 µm
Area: 286227.0 µm²



KEEP CALM AND STUDY THE BRAIN