

Preparing for the American Board
of Pathology (ABPath)
Examination of Fundamental
Knowledge and Skills

Neuropathology

Content Specifications



Overview:

Neuropathology Content Specifications

This guide outlines the content that may appear on the American Board of Pathology’s Neuropathology Subspecialty exam. It provides a framework based on the knowledge and skills typically covered in Fellow-level training, along with applicable Core and Advanced Resident topics from residency training that the trainee is expected to know or be able to perform.

Key to Designations:

C = Core/Foundational Knowledge

AR = Advanced Resident Knowledge

F = Fellow/Advanced Practitioner Knowledge

The exam assesses the knowledge, judgment, skills, and abilities necessary to identify specific entities, properly process specimens, and diagnose and monitor diseases using methods common in the practice of Neuropathology. The specific diseases, tests, and concepts listed in this document are important for candidates to know, but it is not possible to create a fully comprehensive list of all the material needed for certification and effective practice. Candidates should use this guide as a reference when preparing for certification and professional practice.

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1. General: Neuroanatomy, Histology, Pathologic Responses, and Diagnostic Considerations

- a. Neuroanatomy
 - i. Neocortex, White Matter, and Entorhinal Cortex/Hippocampus C
 - ii. Deep (Basal) Nuclei, Brain Stem, and Cerebellum C
 - iii. Spinal Cord and Vascular Supply C
 - iv. Pituitary, Pineal, and Tracts AR
- b. Cell Types
 - i. Neurons, Astrocytes, Oligodendroglia, and Blood Vessels C
 - ii. Ependyma, Microglia and Mononuclear Cells AR
 - iii. Choroid Plexus and Meninges AR
- c. Cerebrospinal Fluid C
- d. Pathologic Responses in Neurons and Axons
 - i. Acute Ischemic (Hypoxic) Cell Change AR
 - ii. Apoptosis AR
 - iii. Axonal Degeneration/Spheroid Reaction F
 - iv. Central Chromatolysis F
 - v. Tract Degeneration F
 - vi. Swollen / Ballooned Neurons F
 - vii. Trans-synaptic Neuronal Degeneration F
 - viii. Olivary Hypertrophy F
 - ix. Protein Aggregation F
 - x. Protein Degradation / Ubiquitin Pathway F
- e. Neuronal Nuclear Inclusions
 - i. Cowdry Type A (e.g., CMV) AR
 - ii. Marinesco Bodies F
 - iii. Other Viral Inclusions F
 - iv. Inclusions due to Neurodegenerative Disorders F
- f. Neuronal Cytoplasmic Inclusions
 - i. Cytoskeleton and Filamentous Inclusions
 - 1. Neurofibrillary Tangles AR
 - 2. Hirano Bodies, Lewy Bodies, and Pick Bodies F
 - 3. Eosinophilic Thalamic Inclusions F
 - 4. Rod-Like Cytoplasmic Inclusions F
 - 5. Filamentous Inclusions F
 - 6. Motor Neuron Disease Inclusions F
 - ii. Cytosolic Inclusions
 - 1. Lafora Bodies F
 - 2. Eosinophilic Inclusions in Inferior Olives F
 - 3. Storage Products in Neurometabolic Disease F
 - iii. Membrane Bound Inclusions
 - 1. Lipofuscin AR

2.	Colloid Inclusions and Bunina Bodies	F
3.	Inclusions from the Acid Vesicle System	F
4.	Granulovacuolar Degeneration	F
5.	Storage Products in Neurometabolic Disease	F
g.	Pathologic Reactions of Astrocytes	
i.	Reactive Gliosis	AR
ii.	Rosenthal Fibers	AR
iii.	Corpora amylacea	AR
iv.	Astrocyte swelling	F
v.	Eosinophilic Granular Bodies	F
vi.	Alzheimer's Type II Gliosis	F
h.	Pathologic Reactions of Oligodendrocytes	
i.	Demyelination / Remyelination	AR
ii.	Dysmyelination	F
iii.	Intramyelinic Vacuolization	F
i.	Pathologic Reactions of Ependymal Cells	
i.	Subventricular gliosis (Granular ependymitis/ependymal granulations)	F
ii.	Subependymal rosettes/tubules	F
j.	Pathologic Reactions of Microglia	
i.	Microglial Activation	F
ii.	Microglial (Babes) Nodule	F
k.	Mineralization in the Brain	
i.	Dystrophic Calcification (e.g., "egg shell" leptomeningeal)	F
ii.	Secondary mineralization associated with other disorders (e.g., calcium metabolism, infection, ischemia, etc.)	F
l.	Edema and Herniation	C
m.	Artifacts of Tissue Handling and Foreign Material	AR
n.	Staining Methods and Special Microscopy	AR
o.	Molecular Techniques	AR

2. Developmental Neuropathology

a.	Fetal and Neonatal Hypoxic-Ischemic Lesions (General Considerations)	
i.	Hydranencephaly, Basket Brain, and Porencephaly	F
ii.	Schizencephaly and Multicystic Encephalopathy	F
iii.	Acute / Subacute White Matter Lesions	
1.	Diffuse White Matter Gliosis	F
2.	Periventricular Leukomalacia	F
iv.	Acute Gray Matter Lesions (General Considerations)	
1.	Cerebral Cortical Necrosis and Pontosubicular Necrosis	F
2.	Basal Ganglia and Thalamic Lesions	F
3.	Cerebellar, Brain Stem, and Spinal Cord Lesions	F
b.	Perinatal Hemorrhages	
i.	Subependymal Germinal Plate / Matrix Hemorrhage	AR

ii.	Subdural, Subarachnoid, and Supial Hemorrhages	AR
iii.	Cerebral parenchymal hemorrhage	AR
iv.	Periventricular hemorrhagic infarct	AR
v.	Cerebellar hemorrhage	AR
vi.	Choroid and Intraventricular hemorrhage	AR
c.	Chronic Lesions	
i.	Laminar necrosis	AR
ii.	Post-hemorrhagic lesions	F
iii.	Periventricular cysts and/or gliosis	F
iv.	Ulegyria	F
v.	Status marmoratus	F
vi.	Unilateral hypertrophy of the pyramidal tract	F
vii.	Post-hypoxic / ischemic brainstem injury	F
d.	Malformations	
i.	Defects of Neural Tube Closure	
	1. Anencephaly	AR
	2. Myelomeningocele	AR
	3. Rachischisis	F
ii.	Herniation of Neural Tube through Mesodermal Defects	
	1. Encephalocele	AR
	2. Meningocele	AR
	3. Occult Spina Bifida	AR
iii.	Chiari Malformations	
	1. Chiari Type I Malformation	AR
	2. Chiari Type II (Arnold-Chiari) Malformation	F
	3. Chiari Type III Malformation	F
iv.	Disorders of Forebrain Induction	
	1. Holoprosencephaly (Alobar, Semilobar, Lobar)	F
	2. Olfactory Aplasia	F
	3. Atelencephaly and Aprosencephaly	F
	4. Agenesis of the Corpus Callosum	F
	5. Anomalies of the Septum Pellucidum	F
	6. Septo-optic Dysplasia	F
	7. Cavum septi pelludici and cavum vergae	F
v.	Neural Migration Defects	
	1. Agyria	F
	2. Lissencephaly Type I	F
	3. Lissencephaly Type II (Cobblestone Lissencephaly)	F
	4. Pachygyria	F
	5. Polymicrogyria	F
	6. Neuronal Heterotopias	F
	7. Cortical Microdysgenesis	F
	8. Focal Cortical Dysplasias, ILAE Classification	F
vi.	Microcephaly	F
vii.	Chromosomal and Single Gene Defects	

	1. Down Syndrome	AR
	2. Fragile X Syndrome	F
	3. Adult Polyglucosan Body Disease (GBE1 mutation)	F
viii.	Megalencephaly	F
ix.	Malformations of the Cerebellum	
	1. Cerebellar Agenesis	F
	2. Dandy-Walker Syndrome	F
	3. Joubert Syndrome	F
	4. Pontocerebellar Hypoplasia	F
	5. Cerebellar Hypoplasia in Other Contexts	F
	6. Granule Cell Aplasia	F
	7. Cerebellar Heterotopias	F
	8. Cerebellar Cortical Dysplasia	F
	9. Chiari Type I Malformation	AR
	10. Lhermitte-Duclos Disease	F
x.	Malformations of the Spinal Cord	
	1. Tethered Cord	AR
	2. Diastematomyelia	F
	3. Syringomyelia/Hydromyelia	F
e.	Arthrogryposis Multiplex Congenita	F
f.	Dysgenetic Syndromes	
	i. Sturge-Weber Syndromes	AR
	ii. Tuberous Sclerosis (Bourneville Disease)	AR
	iii. Neurofibromatosis Type 1 (NF1)	AR
	iv. Neurofibromatosis Type 2 (NF2)	AR
	v. Schwannomatosis	F
g.	Hydrocephalus	AR
h.	Metabolic/Environmental/Iatrogenic Factors	
	i. Maternal Infection (e.g., CMV, HSV)	AR
	ii. Kernicterus	F
i.	Disorders that Primarily Affect White Matter	
	i. Pelizaeus-Merzbacher Disease	F
	ii. Canavan Disease	F
	iii. Alexander Disease	F
j.	Cerebellum	
	i. Menkes Disease	F
	ii. Ataxia-Telangiectasia	F
k.	Spinal Muscular Atrophy	F
l.	Pediatric Trauma	F
m.	Sudden Infant Death Syndrome	F

3. Epilepsy

a.	Hippocampal (Mesial Temporal) Sclerosis	F
b.	Rasmussen encephalitis	F

4. Vascular Disorders

- a. Adult Hypoxic and Ischemic Lesions
 - i. Cerebral Blood Flow C
 - ii. Hypoxic Insult AR
 - iii. Ischemic Insult AR
 - iv. Hypoxic-Ischemic Encephalopathy (Acute/Subacute/Chronic) AR
 - v. Borderzone Hypoxic-Ischemic Damage AR
 - vi. Laminar Necrosis AR
 - vii. Hippocampal Ischemic Injury AR
- b. Vascular Disease and Infarcts
 - i. Atherosclerosis C
 - ii. Arteriosclerosis C
 - iii. Arterial Dissection AR
 - iv. Hypertensive Vascular Changes AR
 - v. Moyamoya Disease F
 - vi. Ischemic Leukoencephalopathy F
 - vii. Siderocalcinosis/Ferrugination of Microvessels (Fahr Disease) F
 - viii. Binswanger Disease F
 - ix. CADASIL F
 - x. CARASIL F
 - xi. COL4A1 F
 - xii. Retinocochleocerebral Vasculopathy (Susac Syndrome) F
 - xiii. TTP F
- c. Angiitis and Vasculitis
 - i. Giant Cell/Temporal Arteritis AR
 - ii. Primary Angiitis of the CNS F
 - iii. Secondary Angiitis due to Systemic Vasculitides F
 - iv. Vasculitis of the Peripheral Nervous System F
 - v. A-beta-related Angiitis (ABRA) F
- d. Embolic Disorders
 - i. Non-Infectious (Atheroemboli, Air, Fat, and Iatrogenic) C
 - ii. Infectious AR
- e. Cerebral Venous Thrombosis F
- f. CNS Infarct (Acute/Subacute/Chronic)
 - i. Infarcts caused by Thromboembolic Occlusion of Large Arteries AR
 - ii. Watershed or Borderzone Infarcts AR
 - iii. Lacunar Infarcts AR
 - iv. Hemorrhagic Infarcts AR
 - v. Iatrogenic Infarcts AR
 - vi. Spinal Cord Infarcts F
- g. Spontaneous Hemorrhage
 - i. Spontaneous Subdural Hemorrhage AR
 - ii. Spontaneous Subarachnoid Hemorrhage AR

iii.	Hypertensive Brain Hemorrhage	AR
iv.	Brain Hemorrhage secondary to Systemic Disease or Therapy	AR
h.	Cerebral Amyloid Angiopathy	
i.	Age-Related	AR
ii.	Brain Hemorrhage	AR
iii.	A-beta-related Angiitis (ABRA)	F
iv.	Inherited Amyloidoses (Non-A-beta)	F
v.	Systemic Amyloidoses	F
i.	Aneurysms	
i.	Berry (Saccular) Aneurysms	AR
ii.	Infective Aneurysms	F
j.	Vascular Malformations	
i.	Arteriovenous Malformations	AR
ii.	Cavernous Hemangioma	AR
iii.	Venous Angioma	F
iv.	Capillary Telangiectasia	F
v.	Arteriovenous Fistula	F
vi.	Vein of Galen Malformation	F
k.	Miscellaneous Vascular Disorders	
i.	Vascular Dementia	F

5. Trauma

a.	Fractures, Skull, and Spine	F
b.	Craniocerebral Trauma	
i.	Coup Lesion	AR
ii.	Contra-Coup Lesion	AR
iii.	Traumatic Epidural Hematoma	AR
iv.	Traumatic Subdural Hematoma	AR
v.	Contusion	F
vi.	Laceration	F
vii.	Traumatic Subarachnoid Hemorrhage	F
viii.	Intraparenchymal (Ball/Streak) Hemorrhages	F
c.	Traumatic Axonal Injury	
i.	Brain Swelling and Raised Intracranial Pressure	AR
ii.	Diffuse Axonal Injury	F
iii.	Diffuse Vascular Injury	F
iv.	Missile Head Injury	F
v.	Blast Head Injury	F
d.	Sequelae of Head Injury	
i.	Chronic Traumatic Encephalopathy (CTE-MND)	F
ii.	Ischemic Damage	F
e.	Traumatic Spinal Cord Injury	F

6. Infections and Inflammatory Diseases

- a. Acute Viral Infections
 - i. Herpes Simplex Virus Infections AR
 - ii. Rabies AR
 - iii. Aseptic Meningitis F
 - iv. Poliomyelitis F
 - v. Enteroviral Encephalitis F
 - vi. Other Herpes Viral Infections (VZV, EBV, CMV) F
 - vii. Adenovirus Infections F
 - viii. Paramyxovirus Infections F
 - ix. Rubella Encephalitis F
 - x. Arbovirus Infections F
 - xi. West Nile Encephalitis F
- b. Chronic and Subacute Viral Infections of the CNS
 - i. Measles Inclusion Body Encephalitis F
 - ii. Subacute Sclerosing Panencephalitis F
 - iii. Progressive Multifocal Leukoencephalopathy
-Includes PML and PML-IRIS associated with MS therapy F
- c. Human Immunodeficiency Virus Infection (HIV)
 - i. HIV encephalitis/leukoencephalitis F
 - ii. HIV-associated Neurologic Disease (HAND) F
 - iii. Neurological and other Disorders Increased in HIV F
 - iv. Therapy-Associated Disorders in Patients with HIV F
- d. Bacterial Infections
 - i. Acute Bacterial Meningitis AR
 - ii. Brain Abscess AR
 - iii. Tuberculosis AR
 - iv. Subdural Empyema AR
 - v. Epidural Abscess AR
 - vi. Syphilis F
 - vii. Lyme Neuroborreliosis F
 - viii. Whipple Disease F
 - ix. Nocardia F
- e. Fungal Infections
 - i. Aspergillosis AR
 - ii. Mucorales Infections AR
 - iii. Fusarium and Other Hyaline Molds AR
 - iv. Cryptococcosis AR
 - v. Candidiasis AR
 - vi. Blastomycosis AR
 - vii. Coccidioidomycosis AR
 - viii. Histoplasmosis AR
 - ix. Phaeohyphomycosis F
- f. Parasitic Infections
 - i. Amebic Infections

	1. Primary Amebic Meningoencephalitis	F
	2. Granulomatous Amebic Encephalitis	F
ii.	Cysticercosis and Other Cestodes	AR
iii.	Cerebral Malaria	F
iv.	Cerebral Toxoplasmosis	AR
g.	Other Inflammatory Diseases	
i.	Neurosarcoidosis	AR
ii.	Rasmussen Encephalitis	F
iii.	Autoimmune Encephalitis	F
iv.	Paraneoplastic Disorders	
	1. Paraneoplastic Encephalomyelitis	F
	2. Paraneoplastic Cerebellar Degeneration	F
	3. Paraneoplastic Opsoclonus-Myoclonus	F
	4. Paraneoplastic Myositis	F
	5. Paraneoplastic Neuropathy	F
v.	Idiopathic Hypertrophic Pachymeningitis	F
vi.	IgG4-Related Disease	F
vii.	Autoimmune (i.e., Lymphocytic) Hypophysitis	F
viii.	Non-Neoplastic Pituitary Disorders	
	1. Infectious Hypophysitis	AR
	2. Pituitary Apoplexy	AR
	3. Pituitary Hyperplasia	F
	4. Autoimmune (Lymphocytic) Hypophysitis	F

7. Demyelinating Diseases

a.	Multiple Sclerosis	
i.	Classic (Charcot-Type) MS	AR
ii.	Acute (Marburg-Type) MS	F
iii.	Concentric Sclerosis (Balo)	F
iv.	Neuromyelitis Optica (Devic Disease)	F
	1. Aquaporin-4 in NMO	F
b.	Other Demyelinating Diseases	
i.	Acute Disseminated Encephalomyelitis (ADEM)	F
ii.	Acute Hemorrhagic Leukoencephalopathy	F
iii.	Guillain-Barré Syndrome (AIDP)	F
iv.	Chronic Inflammatory Demyelinating Polyneuropathy (CIDP)	F
v.	Central Pontine Myelinolysis	F

8. Complications of Systemic Disorders

a.	Vitamin Deficiencies	
i.	Thiamine Deficiency and Wernicke Encephalopathy	F
ii.	Vitamin B12 Deficiency and Subacute Combined Degeneration	F

iii.	Folic Acid Deficiency	F
b.	Systemic Metabolic Disease	
i.	Hypoglycemia	F
ii.	Hyperglycemia	F
c.	Disorders of Serum Electrolytes	
i.	Central Pontine and Extrapontine Myelinolysis	F
ii.	Calcium Disturbances	F
	– Siderocalcinosis/Ferrugination Microvessel (Fahr Disease)	F
d.	Liver Disease	
i.	Acquired Hepatic Encephalopathy	F
ii.	Hepatolenticular Degeneration (Wilson Disease)	F
e.	Lysosomal and Peroxisomal Disorders	
i.	Lysosomal Disorders	
	1. GM2 Gangliosidosis	F
	2. GM1 Gangliosidosis	F
	3. Ceroid Lipofuscinosis (Batten Disease)	F
	4. Niemann-Pick Disease, including Type C	F
	5. Gaucher Disease	F
	6. Acid Beta-Glucosidase-Associated Parkinson Disease	F
	7. Mannosidosis	F
	8. Mucopolysaccharidosis	F
	9. Fabry Disease	F
	10. Type II Glycogenesis (Pompe Disease)	F
	11. Farber Disease	F
	12. Krabbe Disease	F
	13. Metachromatic Leukodystrophy	F
ii.	Peroxisomal Disorders	
	1. Zellweger Cerebroheptorenal Syndrome	F
	2. Adrenoleukodystrophy	F
f.	Mitochondrial Disorders	
i.	Mitochondrial myopathy, encephalopathy, lactic acidosis, and stroke-like symptoms (MELAS)	F
ii.	Myoclonic Epilepsy with Ragged-Red Fibers (MERRF)	F
iii.	Leber Hereditary Optic Neuropathy, Bilateral Striatal Necrosis, and Multiple Sclerosis-Like Mitochondrial Disease (LHON)	F
iv.	Neuropathy, Ataxia, and Retinitis Pigmentosa (NARP)	F
v.	Kearns-Sayre Syndrome (KSS) and Chronic Progressive External Ophthalmoplegia	F
vi.	Myoneurogastrointestinal Encephalopathy (MNGIE)	F
vii.	Leigh Disease	F
g.	Toxicity	
i.	Ethylene Glycol	F
ii.	Methanol	F
iii.	Toluene	F
iv.	Carbon Monoxide	F

- v. Calcineurin Inhibitors (e.g., Cyclosporin A and Tacrolimus) F
- vi. Nucleoside Analogs F
- vii. Phenytoin F
- viii. Chloroquine/Hydroxychloroquine F
- ix. Statin F
- x. Cocaine F
- xi. Heroin F
- xii. 1-Methyl-4-Phenyl Tetrahydropyridine (MPTP) F
- xiii. Inhaled Solvents F
- h. Toxicity/Secondary Effect due to Radiation Therapy
 - i. Radionecrosis F
 - ii. Radiation-Induced Neoplasia F

9. Aging and Neurodegenerative Diseases

- a. Aging
 - i. Normal Aging F
 - ii. Pathologic Aging F
- b. Alzheimer Disease (AD)
 - i. Basic Changes of Alzheimer Disease
 - ii. AD Posterior Variant F
 - iii. AD with Hippocampal Sparing F
 - iv. AD with Cotton Wool Plaques F
 - v. AD Familial Forms
- c. Tauopathies, including Frontotemporal Lobar Degeneration-Tau
 - i. Frontotemporal Dementia-Parkinsonism Linked to Chromosome 17 F
 - ii. Progressive Supranuclear Palsy (Steele-Richardson-Olszewski) F
 - iii. Corticobasal Degeneration F
 - iv. Argyrophilic Grain Disease F
 - v. Pick Disease F
 - vi. Parkinsonism-Dementia Complex of Guam F
 - vii. Postencephalitic Parkinsonism F
 - viii. Tangle-Only Dementia F
 - ix. Diffuse Neurofibrillary Tangles with Calcification F
 - x. Hippocampal Sclerosis Dementia Tauopathy F
 - xi. Chronic Traumatic Encephalopathy (CTE-MND) F
- d. Synucleinopathies
 - i. Lewy-Body Disease (LBD) Spectrum Disorders
 - 1. LBD, Brainstem Type (Parkinson Disease) F
 - 2. LBD, Limbic Type F
 - 3. LBD, Neocortical Type (Dementia with Lewy Bodies) F
 - 4. Parkinson Disease-Dementia (PD-D) F
 - ii. Multiple System Atrophy F
- e. Hippocampal Sclerosis F
- f. Trinucleotide Repeat Disorders

- i. Huntington Disease F
- ii. Spinocerebellar Ataxia F
- iii. Friedreich Ataxia F
- iv. Dentatorubral Pallidoluysian Atrophy F
- v. Spinal-Bulbar Muscular Atrophy/ X-linked Bulbosplinal
Neuronopathy (Kennedy Disease) F
- vi. Myotonic Dystrophy F
- vii. Oculopharyngeal Muscular Dystrophy F
- viii. Machado-Joseph Disease F
- g. Frontotemporal Lobar Degeneration (FLD) with/without ALS
 - i. FLD with TDP-43-Immunoreactive Lesions F
 - ii. FLD with Neuronal Intermediate Filament Inclusions F
 - iii. FLD with FUS-Immunoreactive Lesions F
 - iv. FLD with Motor Neuron Disease F
 - v. Valosin-containing Protein (IBMPFD) F
- h. Motor Neuron Disease
 - i. SMA Type I (Werdnig Hoffman) F
 - ii. SMA Type II (Intermediate) F
 - iii. SMA Type III (Kugelberg-Welander) F
 - iv. Hereditary Spastic Paraparesis F
 - v. Primary Lateral Sclerosis F
 - vi. Amyotrophic Lateral Sclerosis (ALS)
 - 1. ALS with TDP-43 F
 - 2. ALS with TDP-Tau F
 - 3. ALS with SOD F
- i. Neuroaxonal Dystrophy
 - i. Neurodegeneration with Brain Iron Accumulation F
 - ii. Sporadic Adult-Onset Leukoencephalopathy with
Neuroaxonal Spheroids (Neuroaxonal Leukodystrophy) F

10. Prion Disease

- a. Sporadic Creutzfeld-Jakob Disease AR
- b. Inherited Creutzfeld-Jakob Disease F
 - i. Gerstmann-Sträussler-Scheinker Disease F
 - ii. Fatal Familial/Sporadic Insomnia F
 - iii. Other Inherited Creutzfeld-Jakob Disease F
- c. Iatrogenic Creutzfeld-Jakob Disease F
- d. Protease-Sensitive Prionopathy F
- e. Variant Creutzfeldt-Jakob Disease F

11. Neoplasms

- a. Adult-Type Diffuse Gliomas
 - i. Astrocytoma IDH-Mutant, CNS WHO Grade 2,3,4 AR
 - ii. Oligodendroglioma, IDH-Mutant and 1p/19q Co-Deleted,
CNS WHO Grade 2, 3 AR

iii.	Glioblastoma, IDH-Wildtype	AR
iv.	Diffuse Glioma, NOS	AR
b.	Circumscribed Astrocytic Gliomas	
i.	Pilocytic Astrocytoma	AR
ii.	Pleomorphic Xanthoastrocytoma, CNS WHO Grade 2 or 3	AR
iii.	High-Grade Astrocytoma with Piloid Features	F
iv.	Chordoid Glioma	F
v.	Subependymal Giant Cell Astrocytoma	F
vi.	Astroblastoma, MN1-Altered	F
c.	Ependymal Tumors	
i.	Subependymoma	F
ii.	Myxopapillary Ependymoma	F
iii.	Supratentorial Ependymoma, ZFTA-Fusion Positive	F
iv.	Supratentorial Ependymoma, YAP1-Fusion Positive	F
v.	Supratentorial Ependymoma, NOS	F
vi.	Posterior Fossa, Group A (PFA) Ependymoma	F
vii.	Posterior Fossa, Group B (PFB) Ependymoma	F
viii.	Posterior Fossa Ependymoma, NOS	F
ix.	Spinal Ependymoma, NOS	F
x.	Spinal Ependymoma, MYCN Amplified	F
d.	Choroid Plexus Tumors	
i.	Choroid Plexus Papilloma	AR
ii.	Atypical Choroid Plexus Papilloma	F
iii.	Choroid Plexus Carcinoma	F
e.	Glioneuronal and Neuronal Tumors	
i.	Ganglioglioma	AR
ii.	Dysplastic Gangliocytoma of the Cerebellum (Lhermitte-Duclos)	F
iii.	Desmoplastic Infantile Astrocytoma/Ganglioglioma	F
iv.	Dysembryoplastic Neuroepithelial Tumor	F
v.	Gangliocytoma/Multinodular Vacuolating Neuronal Tumor	F
vi.	Central Neurocytoma	F
vii.	Extraventricular Neurocytoma	F
viii.	Cerebellar Liponeurocytoma	F
ix.	Papillary Glioneuronal Tumor (PGNT)	F
x.	Rosette-Forming Glioneuronal Tumor (RGNT)	F
xi.	Cauda equina Neuroendocrine Tumor	F
xii.	Myxoid Glioneuronal Tumor	F
xiii.	Diffuse Glioneuronal Tumor with Oligodendroglioma-like Features and Nuclear Clusters (DGONC)	F
xiv.	Diffuse Leptomeningeal Glioneuronal Tumor	F
f.	Tumors of the Pineal Region	
i.	Pineocytoma	F
ii.	Pineal Parenchymal Tumor of Intermediate Differentiation	F
iii.	Pineoblastoma	F
iv.	Papillary Tumor of the Pineal Region	F

v.	Desmoplastic Myxoid Tumor of the Pineal Region, SMARCB1-Deficient	F
g.	Embryonal Tumors	
i.	Medulloblastoma, Classic Type	AR
ii.	Atypical Teratoid/Rhabdoid Tumor	AR
iii.	Medulloblastoma, Desmoplastic/Nodular Type	F
iv.	Medulloblastoma with Extensive Nodularity	F
v.	Medulloblastoma, Large Cell/Anaplastic Type	F
vi.	CNS Neuroblastoma, FOXR2-Activated	F
vii.	Embryonal Tumors with Multilayered Rosettes	F
viii.	CNS Tumor BCOR Internal Tandem Duplication	F
ix.	Embryonal Tumors with Multilayered Rosettes, C19MC-Altered	F
x.	Medulloblastoma, WNT-Activated	F
xi.	Medulloblastoma, SHH-Activated & TP53 Wild Type	F
xii.	Medulloblastoma, SHH-Activated & TP53 Mutant	F
xiii.	Medulloblastoma, Non-WHT/Non-SHH	F
h.	Tumors of the Cranial and Paraspinal Nerves	
i.	Schwannoma (Cellular and Plexiform Types)	AR
ii.	Neurofibroma	
1.	Plexiform Neurofibroma	AR
2.	Atypical Neurofibromatous Neoplasm of Uncertain Biologic Potential (ANNUBP)	AR
iii.	Ganglioneuroma	AR
iv.	Malignant Peripheral Nerve Sheath Tumor (MPNST)	AR
v.	Perineurioma	AR
vi.	Hybrid Nerve Sheath Tumors	F
vii.	Epithelioid Malignant Peripheral Nerve Sheath Tumor	F
viii.	MPNST with Divergent Mesenchymal and/or Epithelial Differentiation or Perineural Differentiation	F
ix.	Malignant Melanotic Nerve Sheath Tumor	F
i.	Meningothelial Tumors	
i.	Meningioma, NOS	AR
ii.	Atypical Meningioma	AR
iii.	Anaplastic Meningioma	AR
iv.	Meningioma, Meningothelial Type	F
v.	Meningioma, Fibrous (Fibroblastic)	F
vi.	Meningioma, Transitional (Mixed)	F
vii.	Meningioma, Psammomatous	F
viii.	Meningioma, Angiomatous	F
ix.	Meningioma, Microcystic	F
x.	Meningioma, Secretory	F
xi.	Meningioma, Lymphoplasmacyte-Rich	F
xii.	Meningioma, Metaplastic	F
xiii.	Meningioma, Clear Cell Type	F
xiv.	Meningioma, Chordoid Type	F

xv.	Meningioma, Papillary Type	F
xvi.	Meningioma, Rhabdoid Type	F
xvii.	Meningioma, Other Types	F
xviii.	Meningoangiomatosis	F
j.	Mesenchymal (Non-Meningothelial) Tumors	
i.	Chordoma	AR
ii.	Hemangioblastoma	AR
iii.	Lipoma	AR
iv.	Solitary Fibrous Tumor	AR
v.	Chondrosarcoma	AR
vi.	Mesenchymal Chondrosarcoma	AR
vii.	Hemangioma	F
viii.	Intracranial Mesenchymal Tumor FET::CREB Fusion-Positive	F
ix.	CIC Rearranged Sarcoma	F
x.	Primary Intracranial Sarcoma DICER1-Mutant	F
xi.	Ewing Sarcoma	AR
k.	Primary Melanocytic Tumors	
i.	Melanocytosis	F
ii.	Melanocytoma	F
iii.	Melanoma	F
iv.	Melanomatosis	F
l.	Lymphoma and Hematopoietic Tumors of the Central Nervous System	
i.	Diffuse Large B-cell Lymphoma of the CNS	AR
ii.	Langerhans Histiocytosis	F
iii.	Non-Langerhans Histiocytosis (Rosai-Dorfman)	F
iv.	Immunodeficiency-Associated CNS Lymphomas	F
v.	Intravascular Large B-cell Lymphoma	F
vi.	MALT Lymphomas of the Dura	F
m.	Lesions of the Sellar Region	
i.	Rathke Cleft Cyst	AR
ii.	Craniopharyngioma, Adamantinomatous Type	AR
iii.	Craniopharyngioma, Papillary Type	AR
iv.	Pituitary Adenoma/Pituitary Neuroendocrine Tumor (PitNET)	AR
	1. Densely Granulated Corticotroph Adenoma	F
	2. Sparsely Granulated Corticotroph Adenoma	F
	3. Crooke Cell Adenoma	F
	4. Densely Granulated Somatotroph Adenoma	F
	5. Sparsely Granulated Somatotroph Adenoma	F
	6. Mammotroph Adenoma	F
	7. Mixed Somatotroph-Lactotroph Adenoma	F
	8. Sparsely Granulated Lactotroph Adenoma	F
	9. Densely Granulated Lactotroph Adenoma	F
	10. Acidophil Stem Cell Adenoma	F
	11. Thyrotroph Adenoma	F
	12. Gonadotroph Adenoma	F

	13. Null Cell Adenoma	F
	14. Plurihormonal PIT1-Positive Adenoma	F
v.	Pituitary Carcinoma/ Metastatic PitNET	F
vi.	Pituitary Hyperplasia	F
vii.	Hypothalamic Hamartoma	F
viii.	Granular Cell Tumor	F
ix.	Pituicytoma	F
x.	Spindle Cell Oncocytoma	F
n.	Germ Cell Tumors	
i.	Germinoma	AR
ii.	Embryonal Carcinoma	AR
iii.	Yolk Sac Tumor	AR
iv.	Choriocarcinoma	AR
v.	Teratoma, Mature	AR
vi.	Teratoma, Immature	AR
vii.	Teratoma with Malignant Transformation	AR
viii.	Malignant Mixed Germ Cell Tumor	AR
	(Specify Components: Germinoma, Embryonal, etc.)	
o.	Cysts	
i.	Epidermoid and Dermoid Cysts	AR
ii.	Colloid Cyst of the Third Ventricle	AR
iii.	Endodermal/Enterogenous Cyst	AR
iv.	Arachnoid Cyst	AR
v.	Ependymal Cyst	F
vi.	Pineal Cyst	F
p.	Metastatic Tumors	
i.	Neoplasms in Tissues Surrounding the CNS	AR
ii.	Secondary Neoplasms in the Meninges	AR
iii.	Secondary Neoplasms in the Brain and Spinal Cord	AR
q.	Paraneoplastic Disorders	
i.	Paraneoplastic Encephalomyelitis	F
ii.	Paraneoplastic Cerebellar Degeneration	F
iii.	Paraneoplastic Opsoclonus-Myoclonus-Ataxia	F
r.	Familial Tumor Predisposition Syndromes	
i.	Tuberous Sclerosis	AR
ii.	Neurofibromatosis, Type 1 (NF1)	AR
iii.	Neurofibromatosis, Type 2 (NF2)	AR
iv.	von Hippel-Lindau Disease	AR
v.	Li-Fraumeni Syndrome	AR
vi.	Cowden Disease	AR
vii.	Lynch Syndrome	AR
viii.	Nevoid Basal Carcinoma Syndrome	AR
ix.	Rhabdoid Tumor Predisposition Syndrome	AR
x.	Carney Complex	AR
xi.	Familial Adenomatous Polyposis	AR

- i. Steroid Myopathy/ Acute Care Myopathy F
 - ii. Chloroquine / Hydroxychloroquine Vacuolar Myopathy F
- g. Muscular Dystrophies
 - i. Dystrophinopathies F
 - ii. Emery-Dreifuss Muscular Dystrophy F
 - iii. Facioscapulohumeral Dystrophy (FSHD) F
 - iv. Myotonic Dystrophy F
 - v. Oculopharyngeal Muscular Dystrophy F
 - vi. Limb-Girdle Muscular Dystrophy F
 - vii. Congenital Muscular Dystrophy F
- h. Autophagic Vacuolar Myopathies F
- i. Myofibrillar Myopathies F
- j. Distal Myopathies, including Valsoin-Containing Protein (IBMPFD) F
- k. Congenital Myopathies
 - i. Nemaline Myopathies F
 - ii. Core Myopathies F
 - iii. Centronuclear Myopathies F
 - iv. Congenital Fiber Type Disproportion Myopathies F
- l. Neuropathic (Neurogenic) Diseases
 - i. Neuropathic Histopathologic Features F
 - ii. Motor Neuron Diseases, Spinal Muscular Atrophy F

13. Peripheral Nerve

- a. Peripheral Nerve Biopsy
 - i. Handling AR
- b. Peripheral Nerve Ultrastructure F
- c. Major Pathologic Processes
 - ii. Axonal (Wallerian) Degeneration F
 - iii. Distal (“Dying Back”) Axonopathy F
 - iv. Demyelination (Segmental) F
- d. Traumatic Neuroma AR
- e. Inflammatory Neuropathies
 - i. Vasculitic Neuropathy AR
 - ii. Sarcoid Neuropathy AR
 - iii. Guillian-Barré Syndrome (AIDP) F
 - iv. Chronic Inflammatory Demyelinating Polyradiculopathy (CIDP) F
 - v. Paraneoplastic Neuropathy F
- f. Infectious Neuropathies
 - i. Leprosy F
- g. Hereditary Motor and Sensory Neuropathies (HMSN) F
- h. Nutritional Deficiency/Toxic Neuropathies F
- i. Neuropathies Associated with Systemic Diseases
 - i. Diabetic Neuropathy AR
 - ii. Amyloid Neuropathy AR

14. Ophthalmic Pathology

- a. Diseases of the Orbit F
- b. Diseases of the Conjunctiva F
- c. Diseases of the Cornea F
- d. Diseases of the Anterior Segment F
- e. Diseases of the Uvea F
- f. Retina and Vitreous
 - i. Retinal Neoplasms
 - 1. Retinoblastoma AR
 - 2. Melanoma AR
 - ii. Retinal Detachment F
 - iii. Retinal Vascular Disease F
 - iv. Age-Related Macular Degeneration F
 - v. Other Retinal Degeneration F
 - vi. Retinitis F
- g. Diseases of the Optic Nerve F
- h. Phthisis Bulbi F
- i. Therapeutic or Iatrogenic Complications F