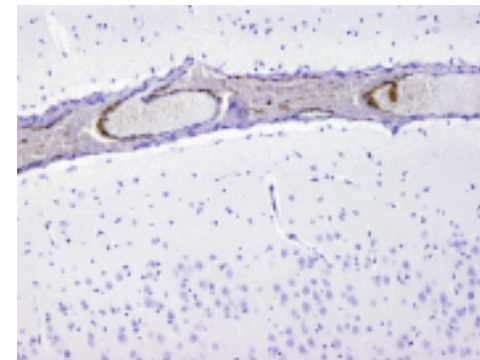
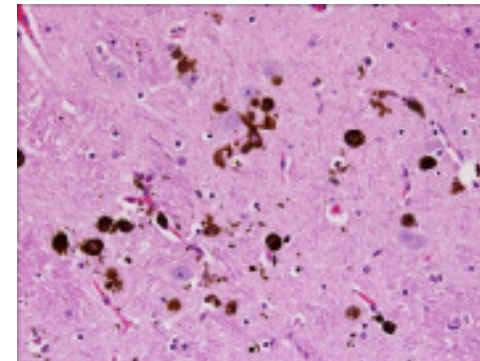
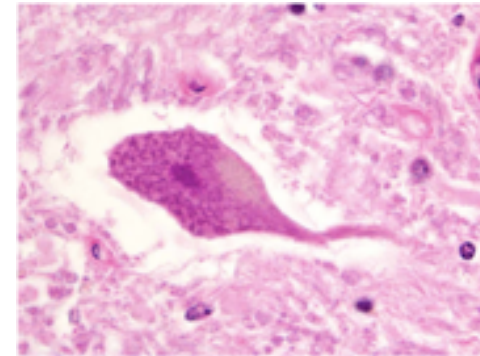
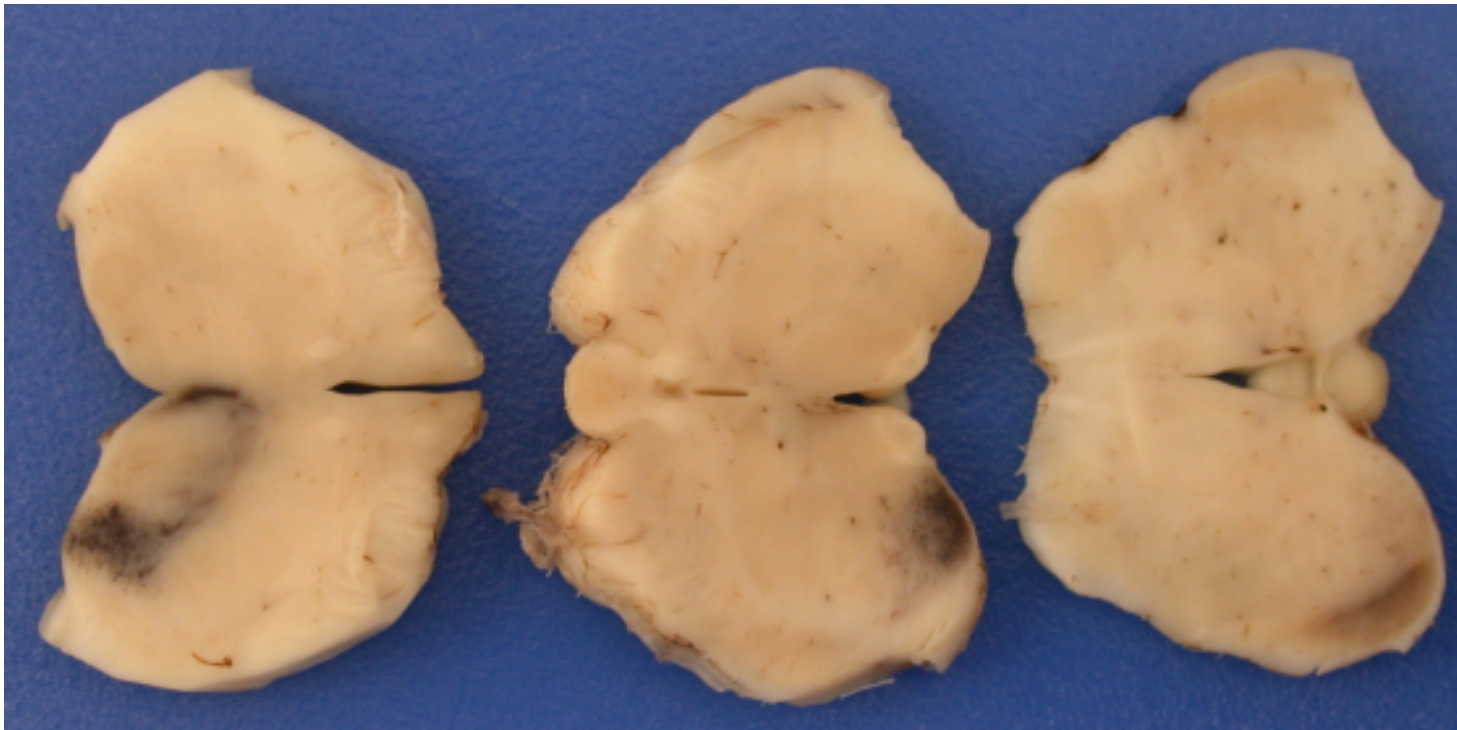


Pigmentation and inclusions in the CNS

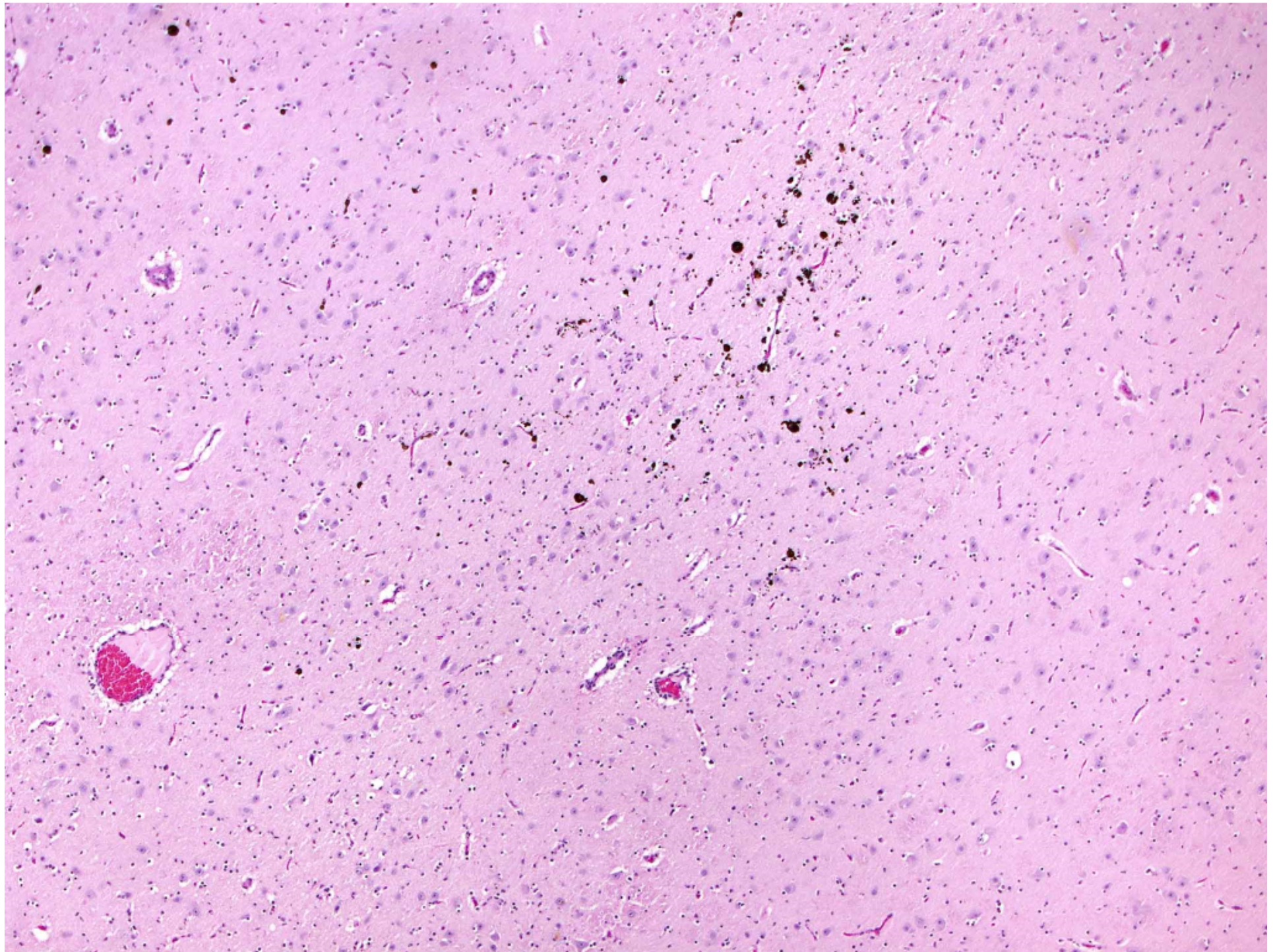
Pigmentation in the CNS

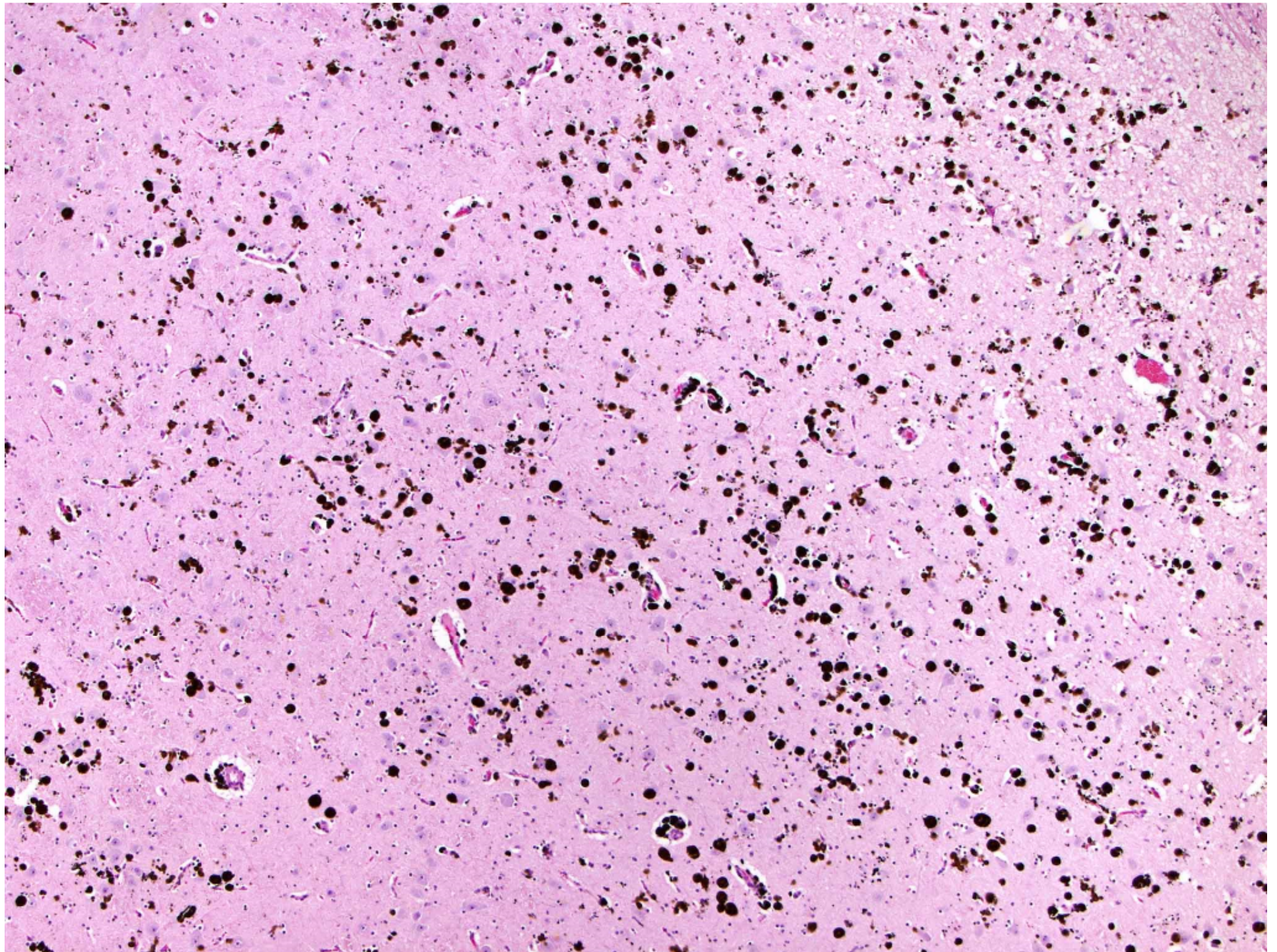
- Accumulation of lipopigment/like substances
 - Age-related
 - Equine degenerative myeloencephalopathy (EM)
 - Ceroid proteinoses / lipofuscinoses
 - *Trachyandra spp* toxicity (lipopigment accumulation widespread including enteric neurones)
 - Gomen disease – horses (accumulation of red-brown pigment mainly in Purkinje cells leading to loss, also brainstem ncbs; environmental toxin?)
- Melanin
- Other exogenous substances
 - Subacute / chronic *Phalaris* intoxication (green-brown granular pigment brainstem and spinal cord neurones)
- Haemosiderin
- Formalin pigment

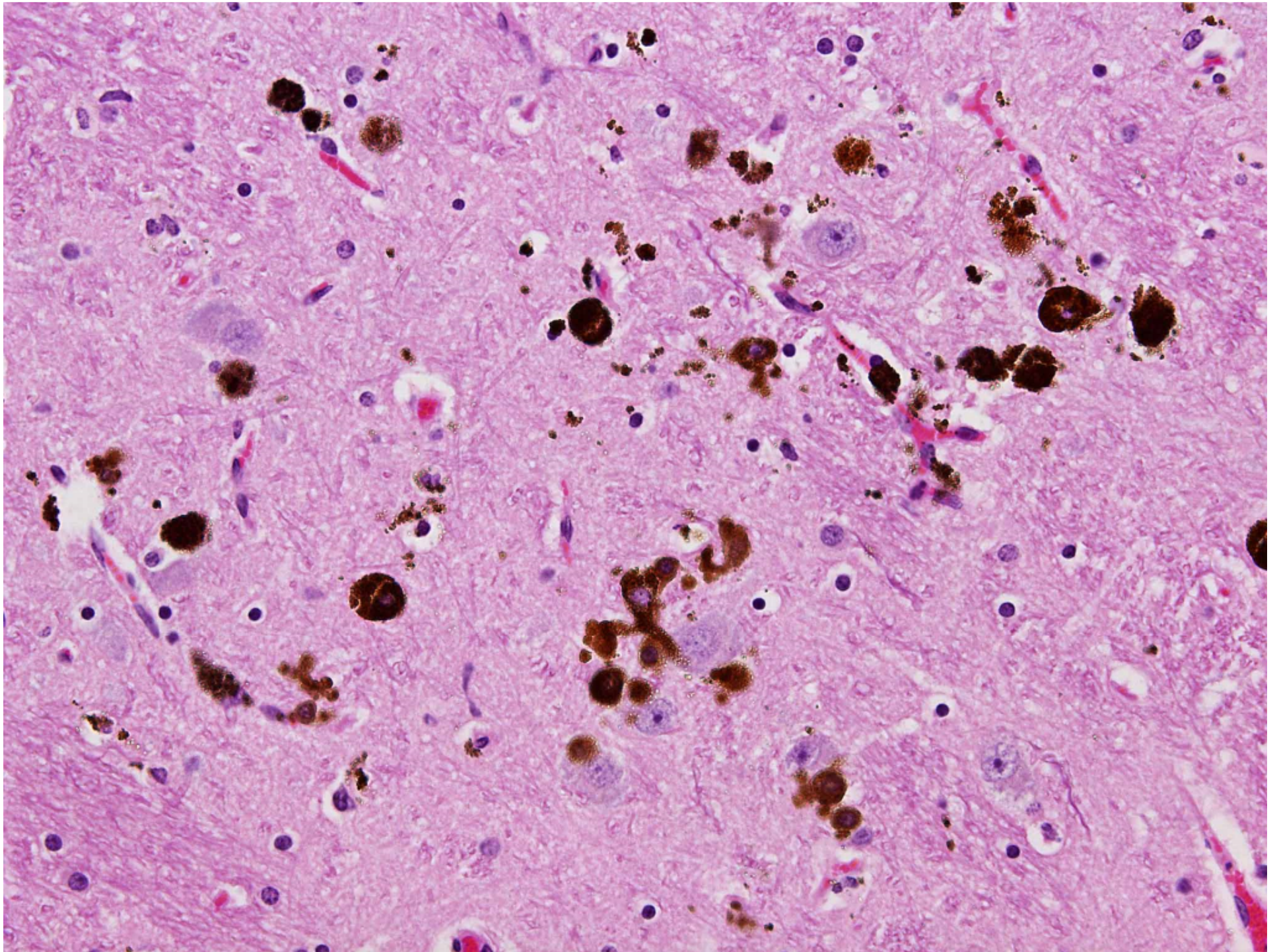


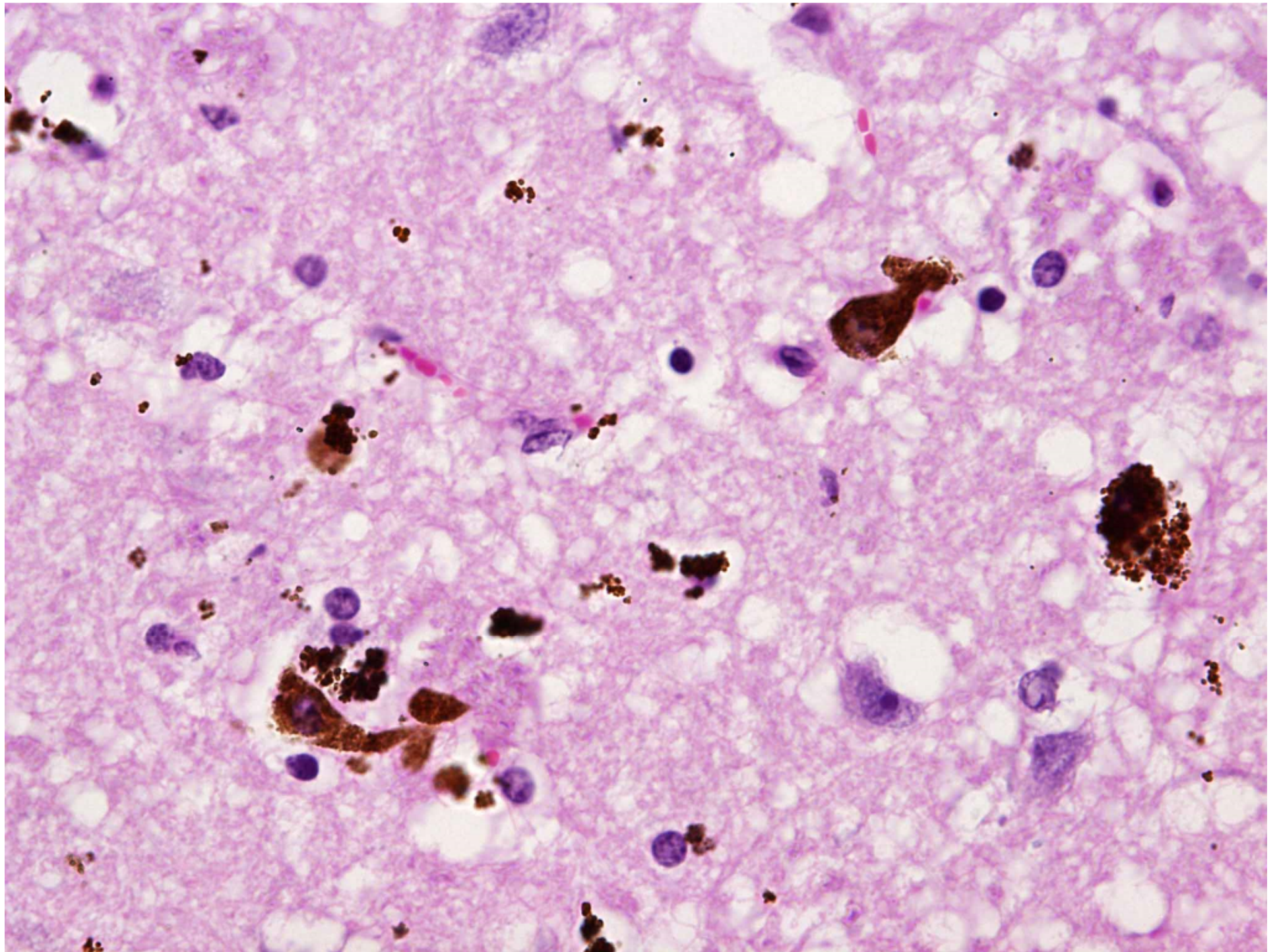


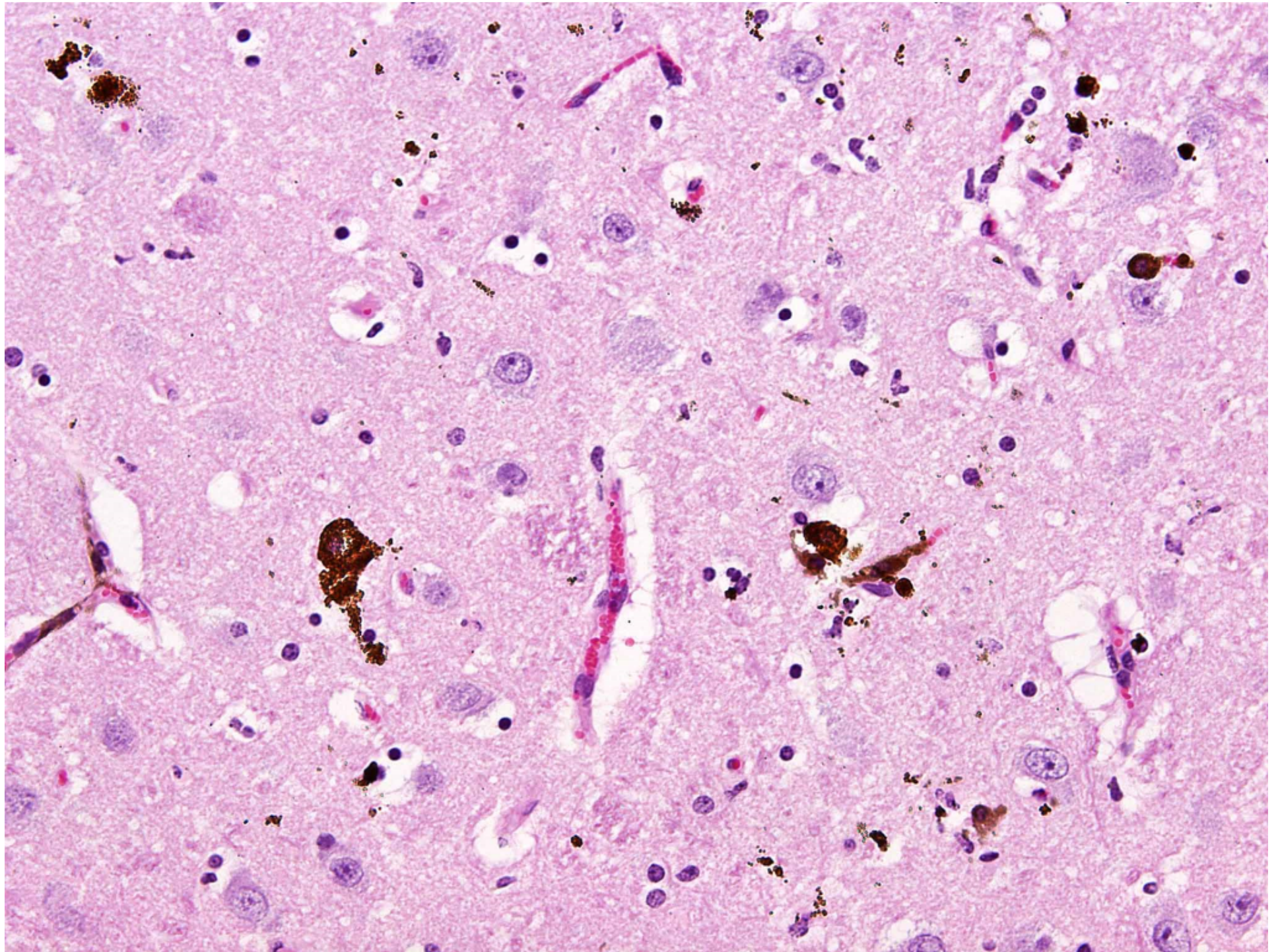
- Melanin

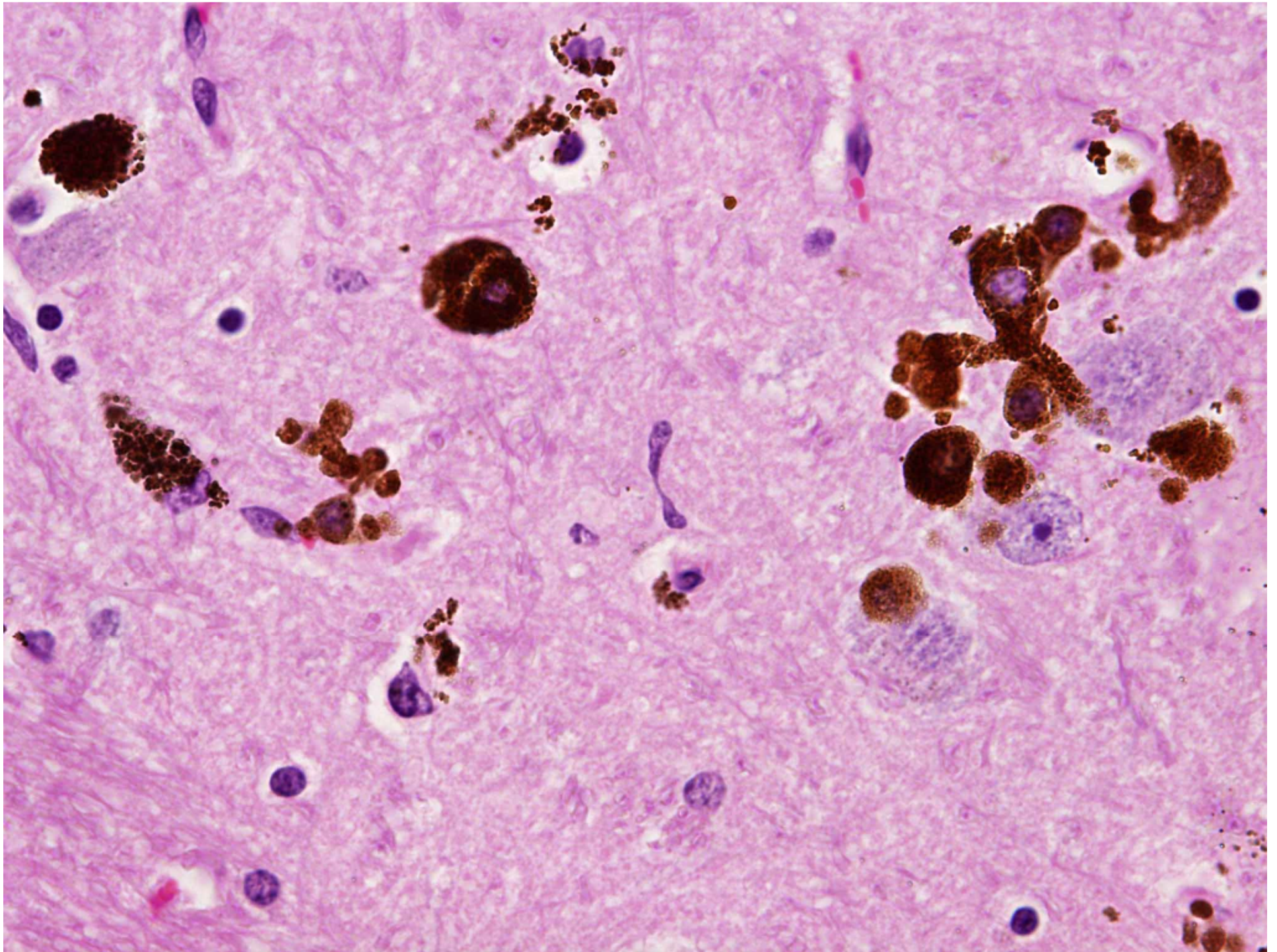




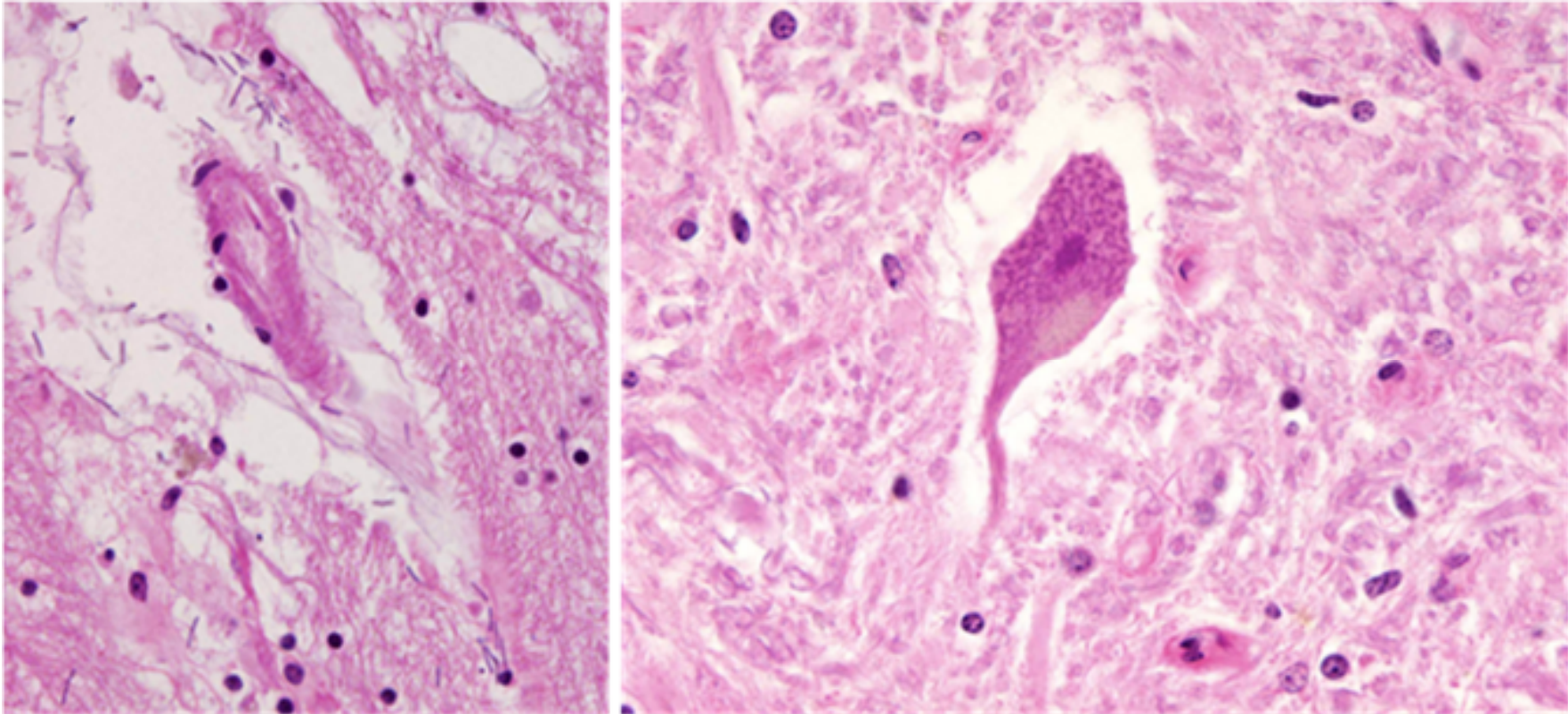




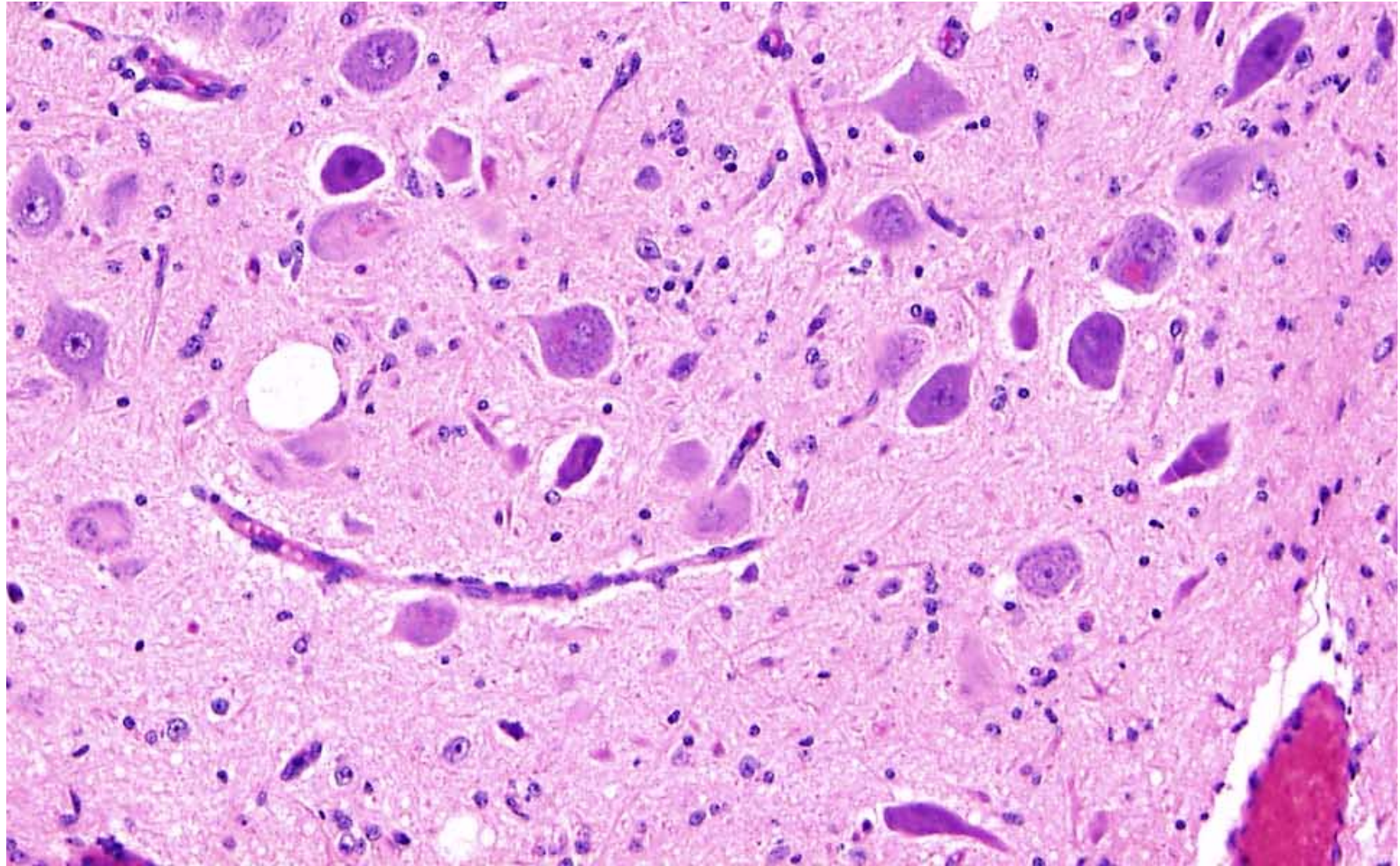




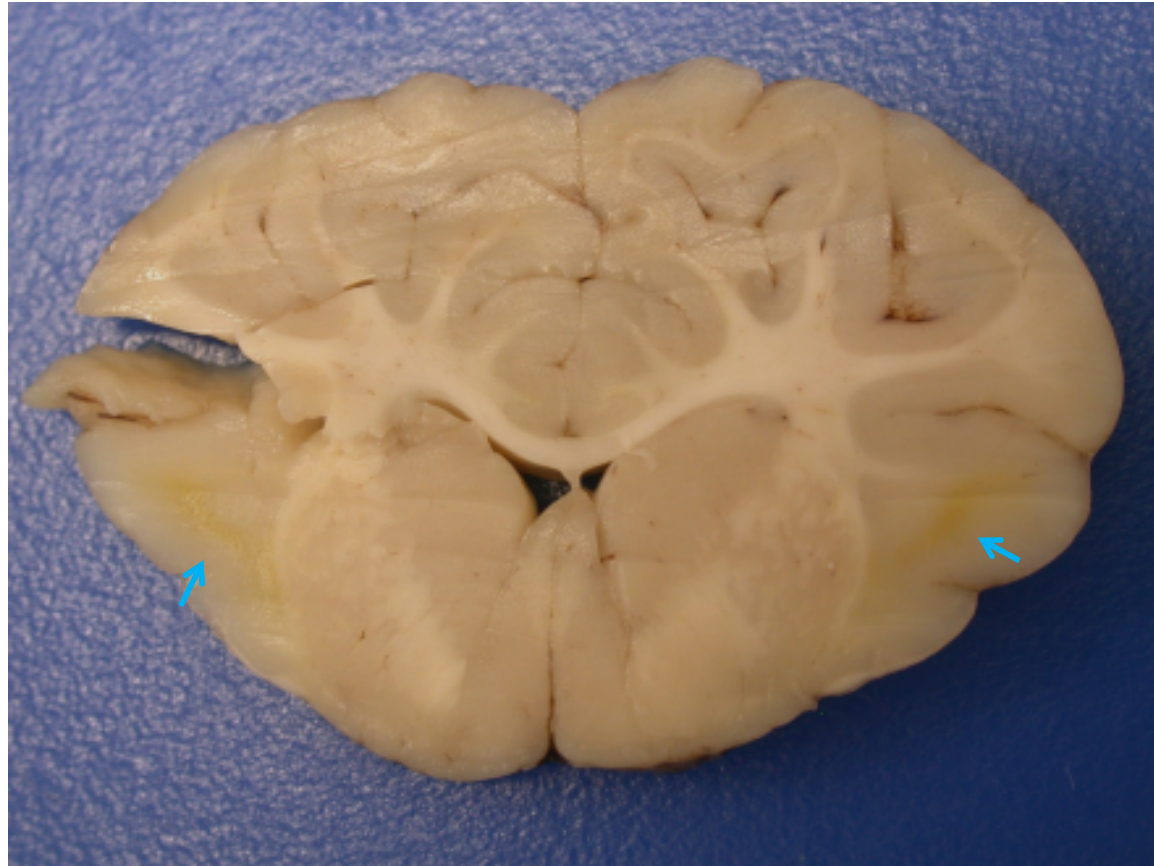
Pigmentation : age – related



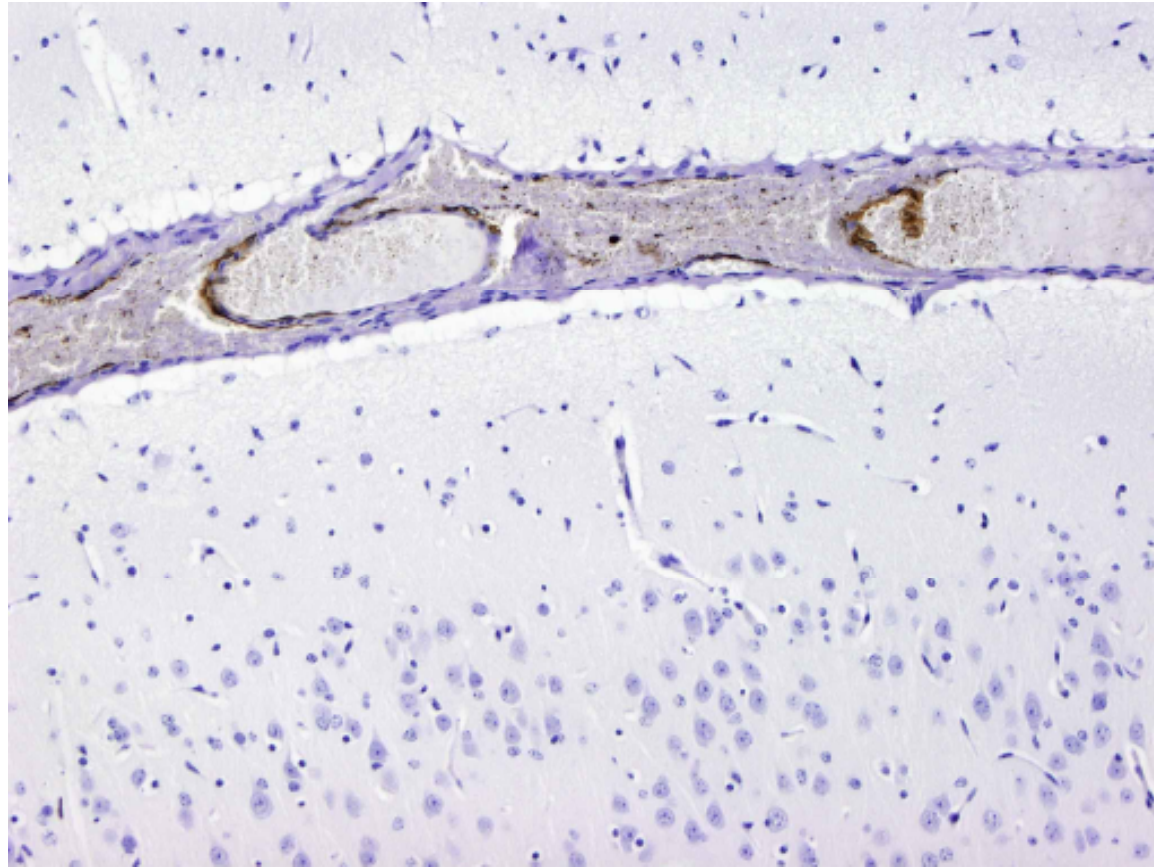
Lipofuscin-like : 3 years cow ; 13 years steer



Ovine, nucleus trapezoid body



Epsilon intoxication in a jaundiced lamb



Formalin pigment

Inclusions : possible causes include

Metabolic

- Lafora disease
- Neuronal inclusion body disease Japanese brown cattle ?
- Ceroid lipofuscinosis

Intoxications

- Chronic phalaris intoxication
- *Trachyandra divaricata* (widespread central and peripheral neuronal lipofuscinosis)

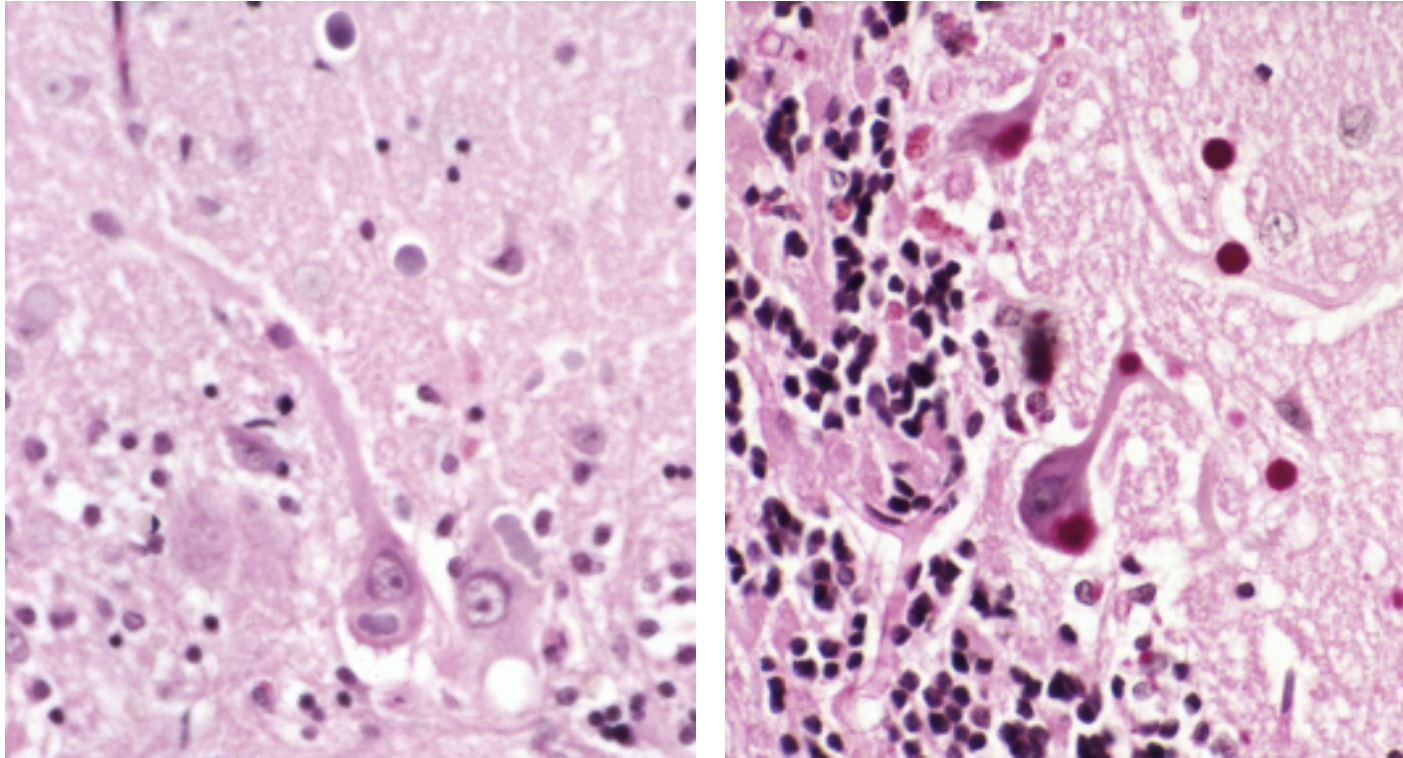
Idiopathic

- Idiopathic brainstem neuronal chromatolysis cattle, other motor neurone degenerations

Caution:

- Age-related lipofuscin accumulations in neurones
- Background (species-dependent) inclusions in neurones in certain anatomical sites *eg* lateral geniculate body in cats

Lafora bodies (disease) cow



- Neuronal glycoproteinosis / polyglucosan bodies (glucose and ? mannose)
- Associated with aging in dogs
- Also associated with neurological disease in dogs – cerebellar PKCs
- Stain with PAS, Alcian blue and methenamine silver
- Appear to be associated with (?derive from) RER and Golgi