

ECVP/ESVP Summer School in Veterinary Pathology

Summer School 2016 – Mock Exam

11/11

10. Tissue from a Dog (electron micrograph)

Central nervous system, grey matter.

A **neuronal perikaryon** fills three quarters of the picture. The neuron contains an **euchromatin-rich nucleus** (in the upper left part of the micrograph), and an **abundant cytoplasm** in which organelles are numerous: **mitochondria**, **rough endoplasmic reticulum**, free ribosomes, Golgi apparatus and **glycogen granules** fill the cytoplasm. Within the lower quarter of the micrograph are a dozen of cell processes (**axons**), most of which are surrounded by a lamellar electron-dense **myelin sheath**. The main ultrastructural change of the featured neuron is the presence within the cytoplasm of a **membrane-bound**, round, well-demarcated, **10-micrometer-large cytoplasmic vacuole**. The vacuole contains low amounts of electron-lucent granular material. In the neuron, the rough endoplasmic reticulum and the Golgi apparatus show mild vacuolation (visible in the inset picture).

Morphologic diagnosis / diagnoses

Central nervous system: marked **cytoplasmic (1 pt) neuronal (1 pt) vacuolation (1 pt)**.

Comment: Described in **Rottweiler dogs**.

Marks

Central nervous system	1
Grey matter	1
Neuron / perikaryon	1
Nucleus: euchromatin-rich	1
Mitochondria	1
Rough endoplasmic reticulum	1
Golgi apparatus	1
Glycogen granules	1
Axon	1
Myelin sheath	1
Cytoplasmic vacuole	1
Membrane-bound	1
Electron-lucent granular content	1
Size in micrometers	1
Dilation of RER and Golgi	1
Morphologic diagnosis	3
Design	2

Reference

Kortz GD, Meier WA, Higgins RJ, French RA, McKiernan BC, Fatzer R, Zachary JF. Neuronal vacuolation and spinocerebellar degeneration in young Rottweiler dogs. *Vet Pathol* 1997, 34(4): 296-302.