

Study	Link	Publication Year	Species	Storage temperature	Storage location notes	Brain location (in situ or ex situ)	General microscopy method	Visualization method specifics	Brain Region	Cell Type	Time Point	Structural feature	Decomposition outcome	Decomposition notes
Furukawa 2015	https://www.researchgate.net/publication/275111111	2015	Human	Not recorded	"A 47-year-old woman was found under the ground in front of her house. Police research revealed that her husband killed her with manual strangulation and after keeping her body in a forest for several days, she had been burying for about 40 days. At discovering her body, the body was rapped with thin plastic film and covered with plastic seat."	In situ	Light microscopy	H&E and IHC staining	Cerebellum	Multiple	40 days	General cell membrane	Some Purkinje and granule cells remain identifiable (Table 2). "As an interesting case, the granular cell layer of the cerebellum obtained from case 12 individual whose postmortem interval was presumed over 40 days, decreased the stain-ability, however the morphology of the granular cells have been well keeping compared with the longer agonal duration cases that was classed into severe level." ... "Purkinje cells from case 12 remained the morphology with normal nucleus in many cells, although staining ability was decreased." ... "The antigens expressed during agonal duration might be kept even in postmortem interval. In a special case in which an individual was killed and buried for 40 days under ground after being strangled, the antigens related to stress and ischemic signaling pathway such as HSP70, C/EBP, CIRBP, RBM3 and SIRT 1 were detectable in the molecular layer and dentate nucleus of the cerebellum" Also Figure 1E.	
Gelpi 2007	https://pubmed.ncbi.nlm.nih.gov/17111111/	2007	Human	3°C	"The body of a 77-year-old woman was stored in a cooling chamber of the municipal mortuary at 3°C for 2 months after death."	In situ	Light microscopy	Morphological stains and immunohistochemical stains, many of each	Cortex and Cerebellum	Multiple	8 weeks	General cell membrane	"Historically, normal brain structures including all major parenchymal cell types (neurons, astrocytes, oligodendrocytes, microglia), neuropil, axons, and myelin sheaths were preserved." ... "Histomorphology of cerebral (A: Hematoxylin and eosin/HE, ×100) and cerebellar (B: HE, ×40) cortex is well preserved. There is moderate vacuolation of brain parenchyma and some red neurons are observed."	
Henstridge 2015	https://pubmed.ncbi.nlm.nih.gov/26111111/	2015	Human	Not recorded	Not recorded	Not recorded	Electron microscopy	Array tomography and electron microscopy	Multiple brain regions	Multiple	75 hours	General cell membrane	Remarkable degree of synapse preservation. Good axonal and myelin integrity. "In summary, our electron microscopy approach reveals remarkable synaptic preservation, allowing us to investigate ultrastructural changes in human synapses, post-mortem."	Alzheimer's disease cases not included because they didn't report good synapse preservation, but it is unclear if this was due to Alzheimer's disease status or decomposition during the PMI.
MacKenzie 2014	https://pubmed.ncbi.nlm.nih.gov/25111111/	2014	Human	Late autumn/winter temperature	"[I]mmersed in approximately 6 m of fresh water in late autumn/winter from where it was recovered approximately 10 weeks after the deceased was last seen alive"	In situ	Light microscopy	H&E and Luxol fast blue staining	Not recorded	Neuron	10 weeks	General cell membrane	"Good histology showing evidence of subarachnoid hemorrhage (A), excellent differentiation of gray and white matter (B), and evidence of the morphological changes of ischemic neuronal injury ..." "Histology was well preserved and revealed the morphological changes of anoxic neuronal injury (Fig. 3). β-Amyloid precursor protein immunocytochemistry demonstrated small axonal spheroids in the subcortical white matter and corpus callosum". Also Figure 3.	
MacKenzie 2014	https://pubmed.ncbi.nlm.nih.gov/25111111/	2014	Human	Summer temperature in soil, "buried at a depth of approximately 0.75 m in a communal garden in summer"	"[B]uried at a depth of approximately 0.75 m in a communal garden in summer"	In situ	Light microscopy	β-Amyloid precursor protein immunocytochemistry	Cerebral cortex and thalamus	Neuron	2 weeks	General cell membrane	"There was also a strong neuronal staining in the cerebral cortex and thalamus, in keeping with an anoxic neuronal injury" Also Figure 8 & 9.	
MacKenzie 2014	https://pubmed.ncbi.nlm.nih.gov/25111111/	2014	Human	Not recorded	Not recorded	In situ	Light microscopy	β-Amyloid precursor protein immunocytochemistry	Not recorded	Not recorded	5 weeks	General cell membrane	"External examination revealed an area of brown discoloration consistent with subarachnoid hemorrhage, but this appeared histologically to be caused by blood leaking from congested vessels secondary to autolysis. Histological appearances were otherwise very poorly preserved (Fig. 5). β-Amyloid precursor protein immunocytochemistry decorated a few disintegrating white matter axonal spheroids and neuritic plaques were also identified in the cerebral cortex."	
MacKenzie 2014	https://pubmed.ncbi.nlm.nih.gov/25111111/	2014	Human	Not recorded	Not recorded	In situ	Light microscopy	β-Amyloid precursor protein immunocytochemistry	Not recorded	Not recorded	7 weeks	General cell membrane	"Anatomical structures could not be identified with any degree of certainty and blocks were selected at random. The dura was well preserved and showed no abnormality. Histologically, the brain tissue structure was better preserved than what might have been anticipated and deep cerebral white matter, hippocampus, and cerebellar cortex were all identifiable. Perivascular and parenchymal hemorrhages were present in the white matter and β-APP immunocytochemistry revealed strong staining of hippocampal pyramidal cells and swaths of positive axons and small spheroids in the white matter". Also Figure 8.	Case 5 not included as it is not clear if they are referring to any cell membrane morphology.
Shuangshohi 1979	https://pubmed.ncbi.nlm.nih.gov/11111111/	1979	Human	Not recorded	Not recorded	In situ	Light microscopy	H&E staining	Choroid plexus	Ependymal cells	73 hours	General cell membrane	Cilia were identified. "Transversely cut villus of choroid plexus with multiple cilia of few squamous epithelial cells. Arrow indicates two cilia lying side by side. Granules of melanin are also present in epithelial cytoplasm" ... "Some authors, including ourselves, have emphasized the need for prompt fixation of tissue (two to six hours after death of the patient) or the proper fluid medium for direct visualization, to demonstrate cilia in ependymal and choroidal epithelium. Failure to find cilia has been attributed to a delay in fixation or in viewing the tissue. The postmortem examination of our patient was conducted 73 hours after death, but nevertheless cilia were seen in both the choroidal epithelium and ependyma. It is not clear why cilia of adults usually are autolyzed, but were preserved in this case." Also Figure 2C	While they reported that cilia were identified, did not comment on the degree of preservation.
Suárez-Piñilla 2015	https://pubmed.ncbi.nlm.nih.gov/26111111/	2015	Human	Not recorded	Not recorded	In situ	Light microscopy	H&E staining, silver staining, toluidine blue staining	Cerebellum	Multiple	6 hours	General cell membrane	Severe autolysis of granule cells and Purkinje cells in the cerebellum. "Histology revealed, as a major finding, an extensive necrosis involving the GCL with widespread vacuolation and almost complete disappearance of neuronal nuclei (Fig-ure 1B, C). Many Purkinje cells were gone, and those remaining appeared collapsed and showed hyperbasophilic-like change, known as dark neurons (DN) (Figure 1D). These neurons also displayed hyperargyrophilia and appeared noticeably darker with toluidine blue staining (Figure 1E and F). The rest of the brain microscopic examination was essentially normal, although some scattered neurons from deeper layers of the neocortex and from the hippocampal CA1 also showed dark neuron change. Those neurons exhibited similar characteristics and behaved in the same way as Purkinje cells with the above mentioned histochemical stainings."	