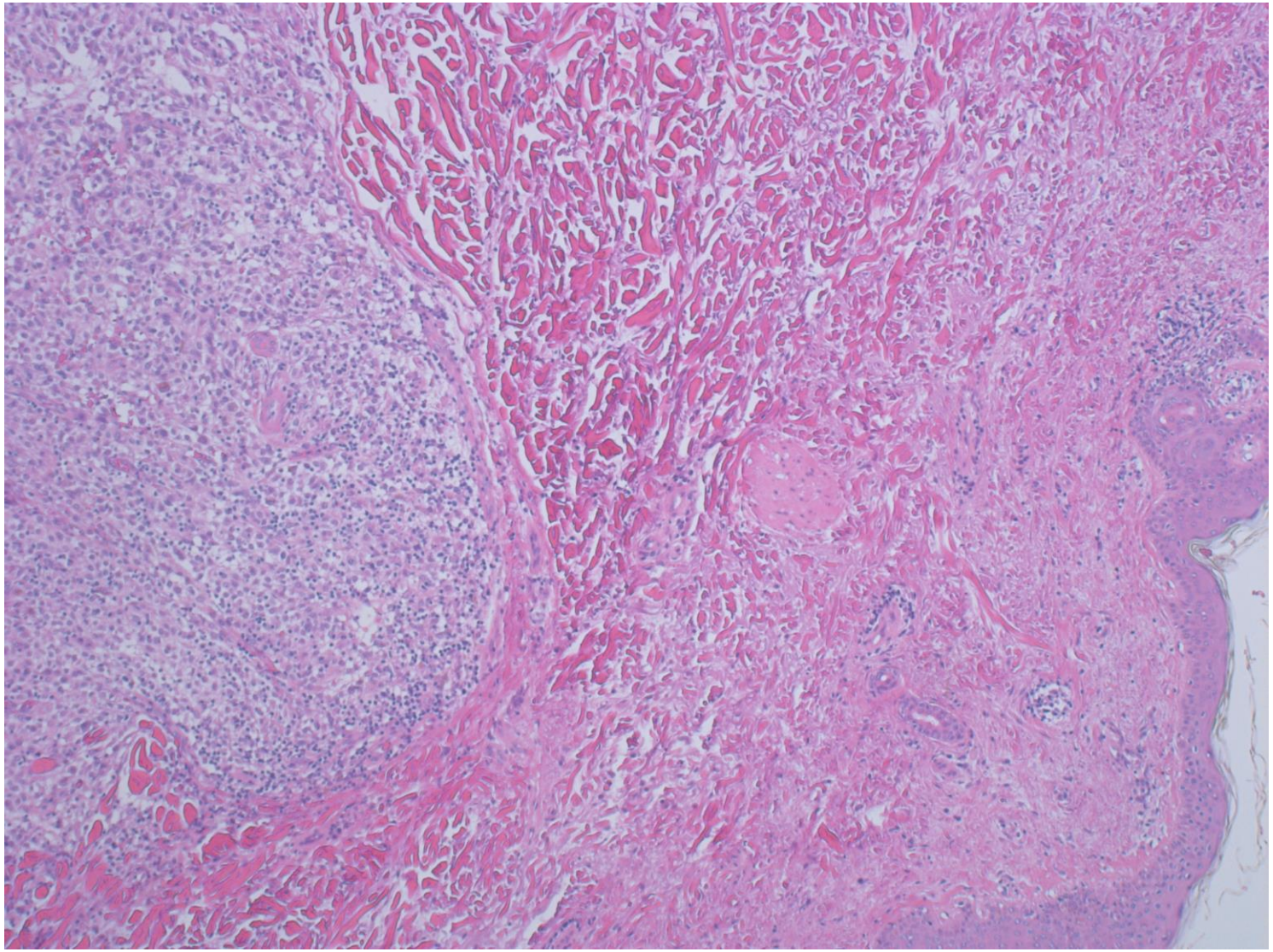
# Malignant melanoma, clear cell type (lipid-rich type)

Clear cell melanoma is a rare clear cell malignancy, characterized by intracytoplasmic glycogen and positive labeling for S-100 protein, HMB-45 and Melan-A. Differential diagnosis includes carcinoma, perivascular epithelioid cell tumor (PEComa) and epidermotropic clear cell sarcoma. Molecular studies demonstrate BRAF V600E mutation, copy gains at the 6p25 (RREB1) and 11q13 (CCND1) loci, and the absence of EWSR1-ATF1 fusion. Baloon cell melanoma is a subtype of malignant melanoma microscopically composed of tumor cells with large, vacuolated cells with foamy cytoplasm. Clear cell and balloon cell melanomas may overlap each other. Here, an 88 y-o male case of recurrent malignant melanoma of the upper arm with clear cell histology principally caused by accumulation of lipid droplets in the cytoplasm. It has been shown that a lipid storing-phenotype with lipid droplets accumulation is seen in the melanoma stem cells, while differentiated melanoma cells show reduction of lipid storage.

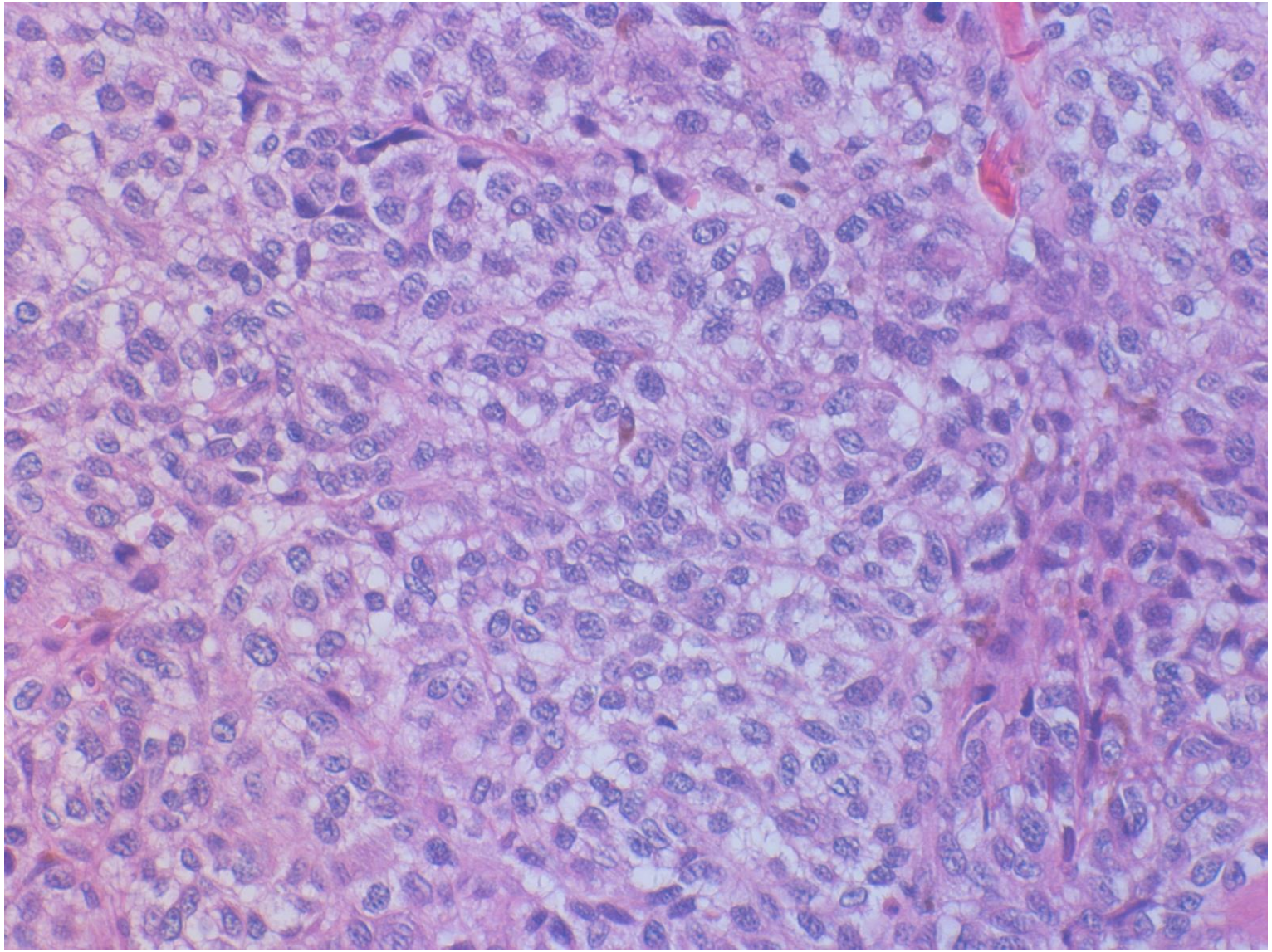
Ref.-1: Pletneva MA, et al. Clear cell melanoma: a cutaneous clear cell malignancy. Arch Pathol Lab Med 2014; 138(10): 1328-1336. doi: 10.5858/arpa.2014-0307-CC

Ref.-2: Wei G, et al. Balloon cell melanoma: a systematic review. Int J Dermatol 2022; 61(3): 266-277. doi: 10.1111/ijd.15448

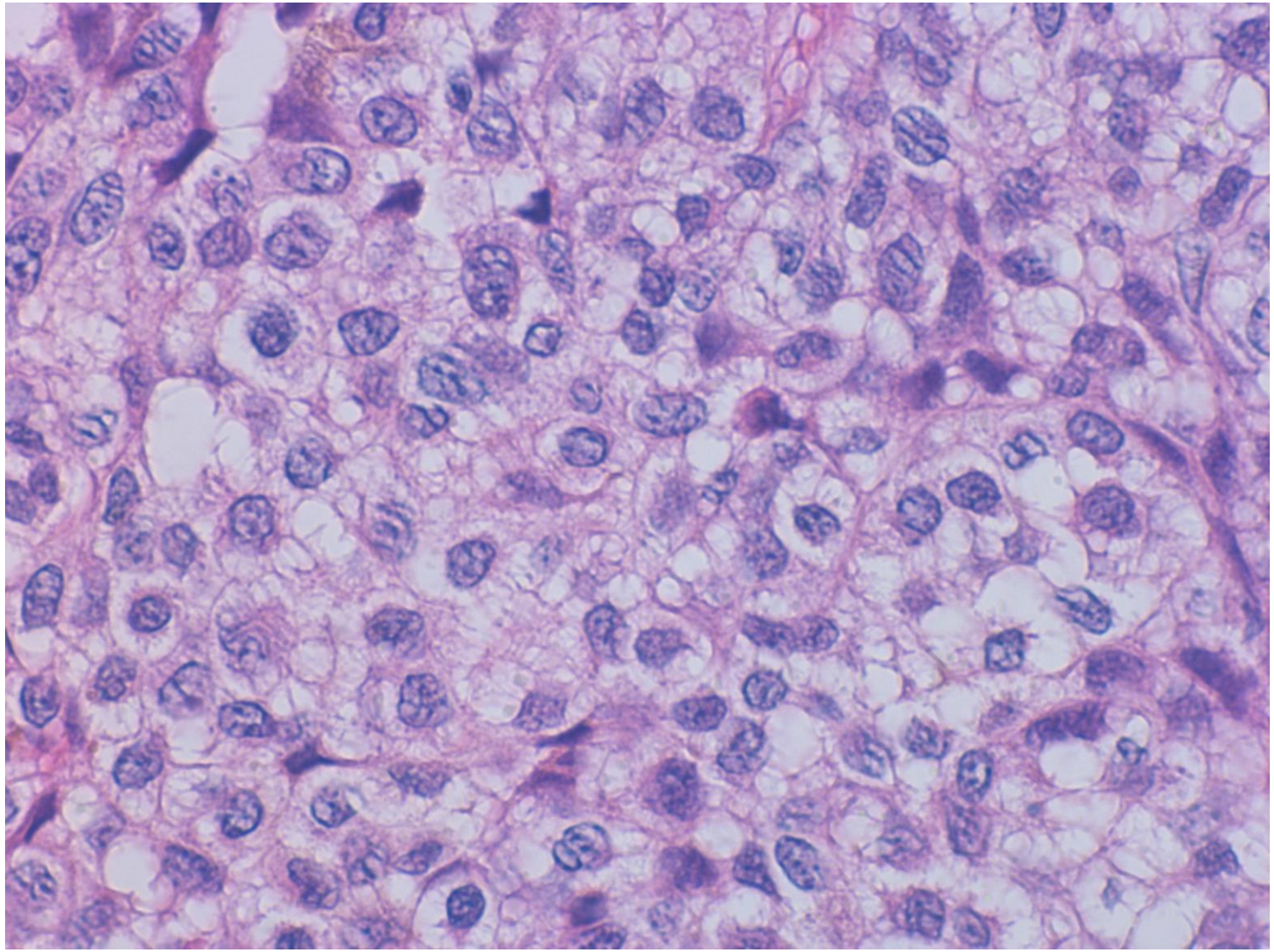
Ref.-3: Giampietri C, et al. Lipid storage and autophagy in melanoma cancer cells. Int J Mol Sci 2017; 18(6): 1271. doi: 10.3390/ijms18061271



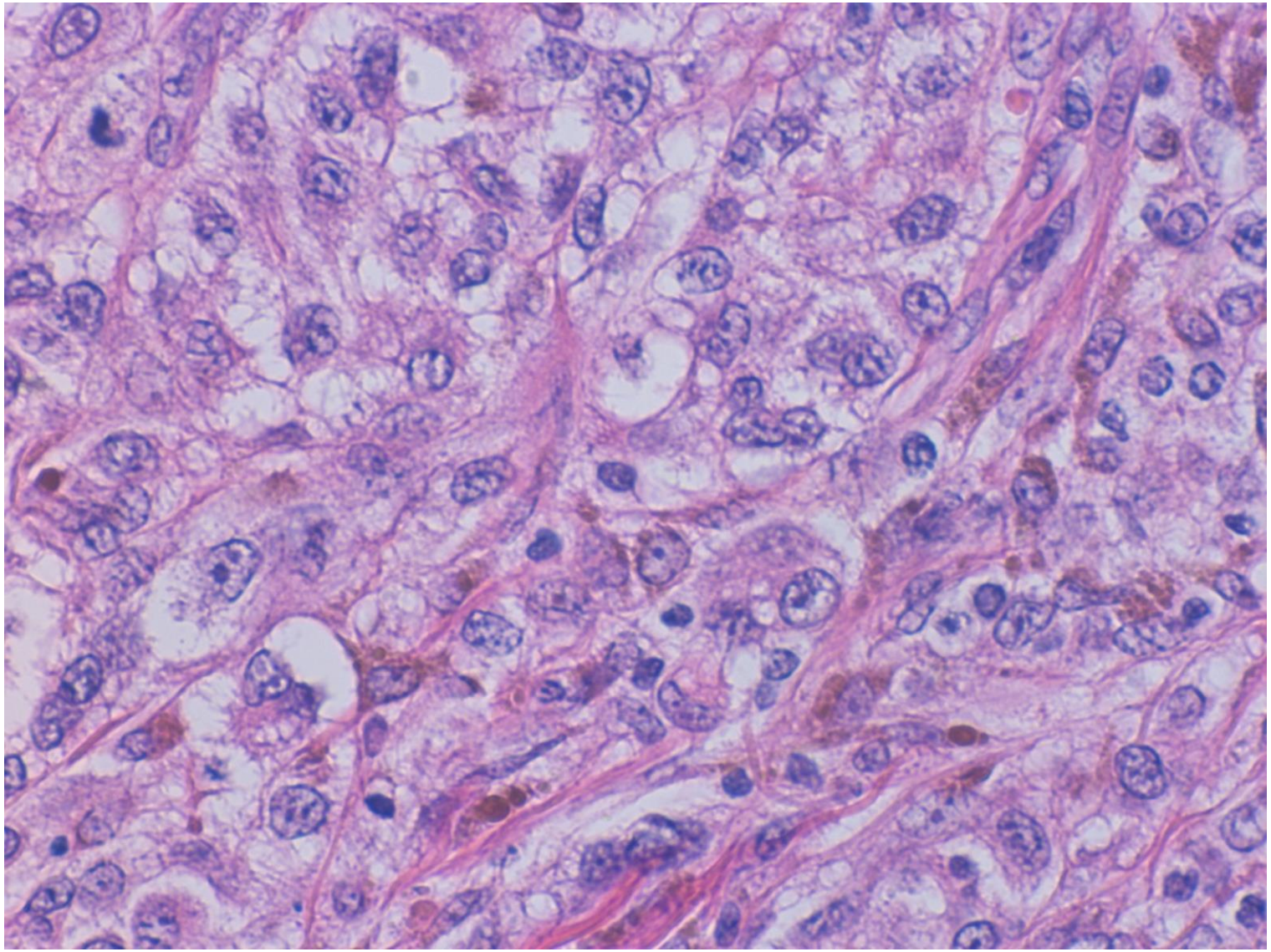
Local recurrence of malignant melanoma, clear cell type, in the right upper arm of an 88 y-o male patient.  Two years earlier, the patient received local resection of malignant melanoma of “balloon cell type”.  Intradermal recurrence is observed (H&E-1).



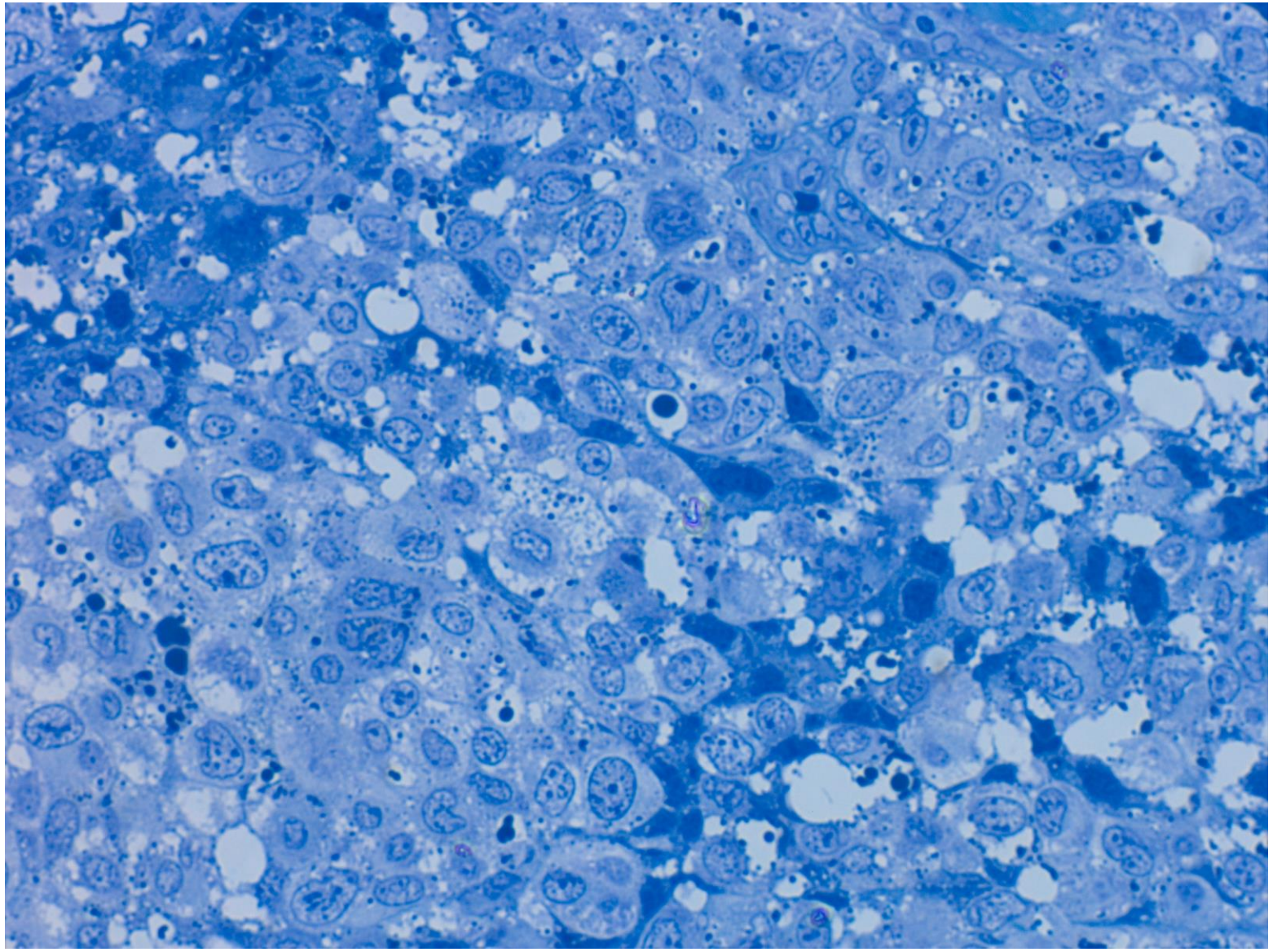
Local recurrence of malignant melanoma, clear cell type, in the right upper arm of an 88 y-o male patient.  The recurrent tumor consists of solid-growing atypical cells with clear cell cytoplasm (H&E-2).



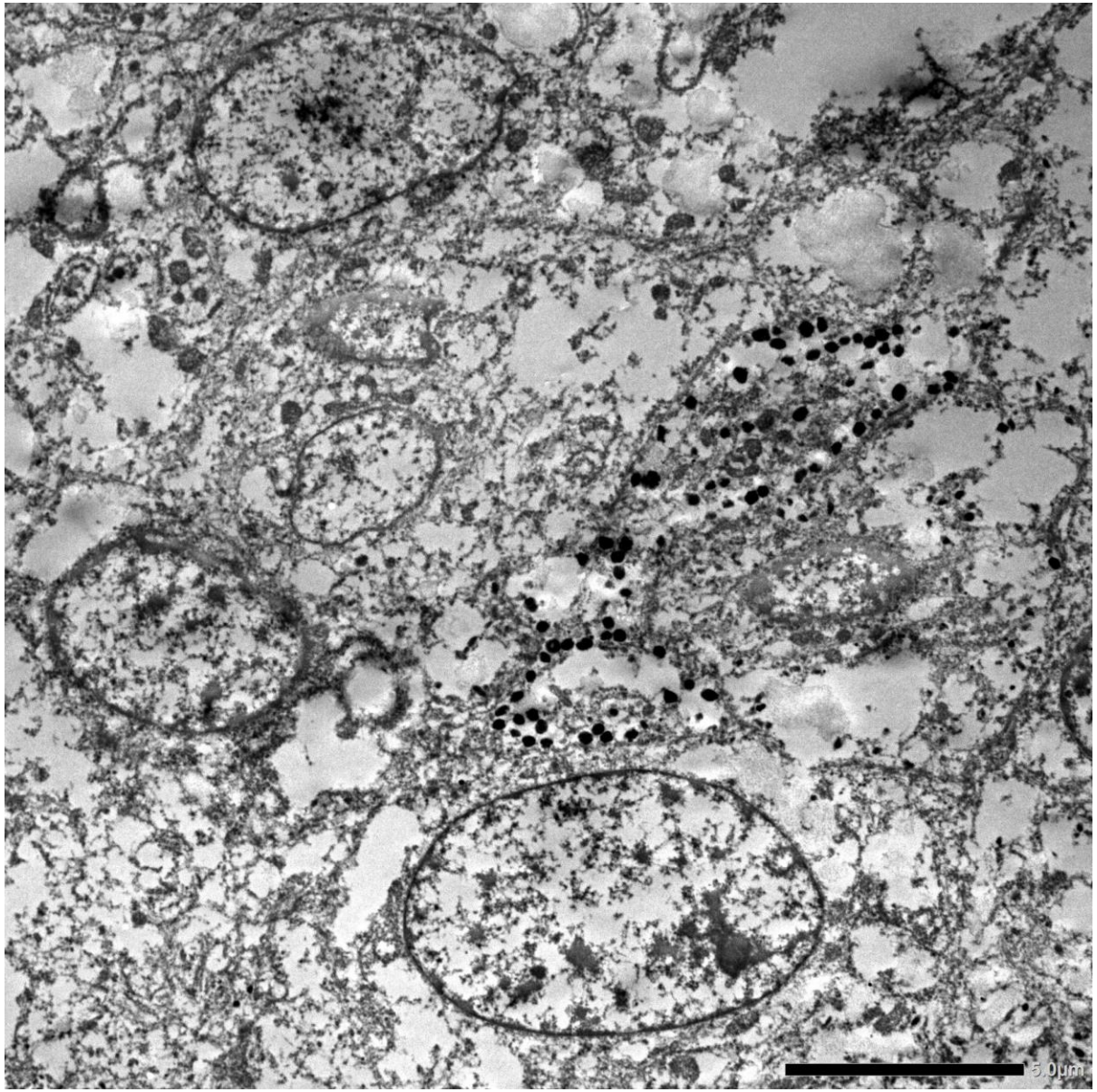
Local recurrence of malignant melanoma, clear cell type, in the right upper arm of an 88 y-o male patient.  The recurrent tumor consists of solid-growing atypical cells with clear cell cytoplasm.  Vacuolated appearance is evident (H&E-3).



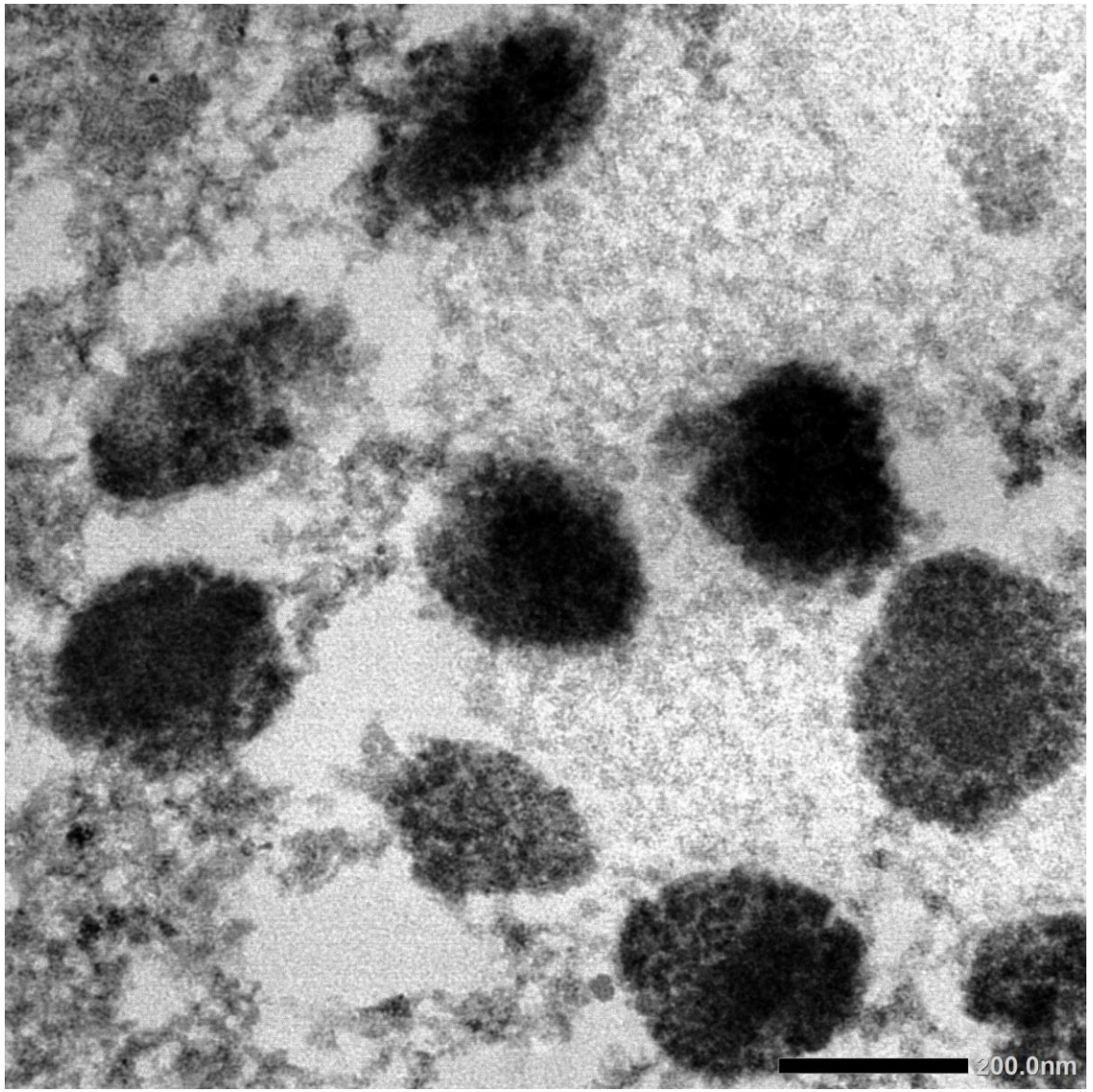
Local recurrence of malignant melanoma, clear cell type, in the right upper arm of an 88 y-o male patient.  The recurrent tumor consists of solid-growing atypical cells with clear cell cytoplasm.  Some tumor cells possess melanin pigment in the cytoplasm (H&E-4).



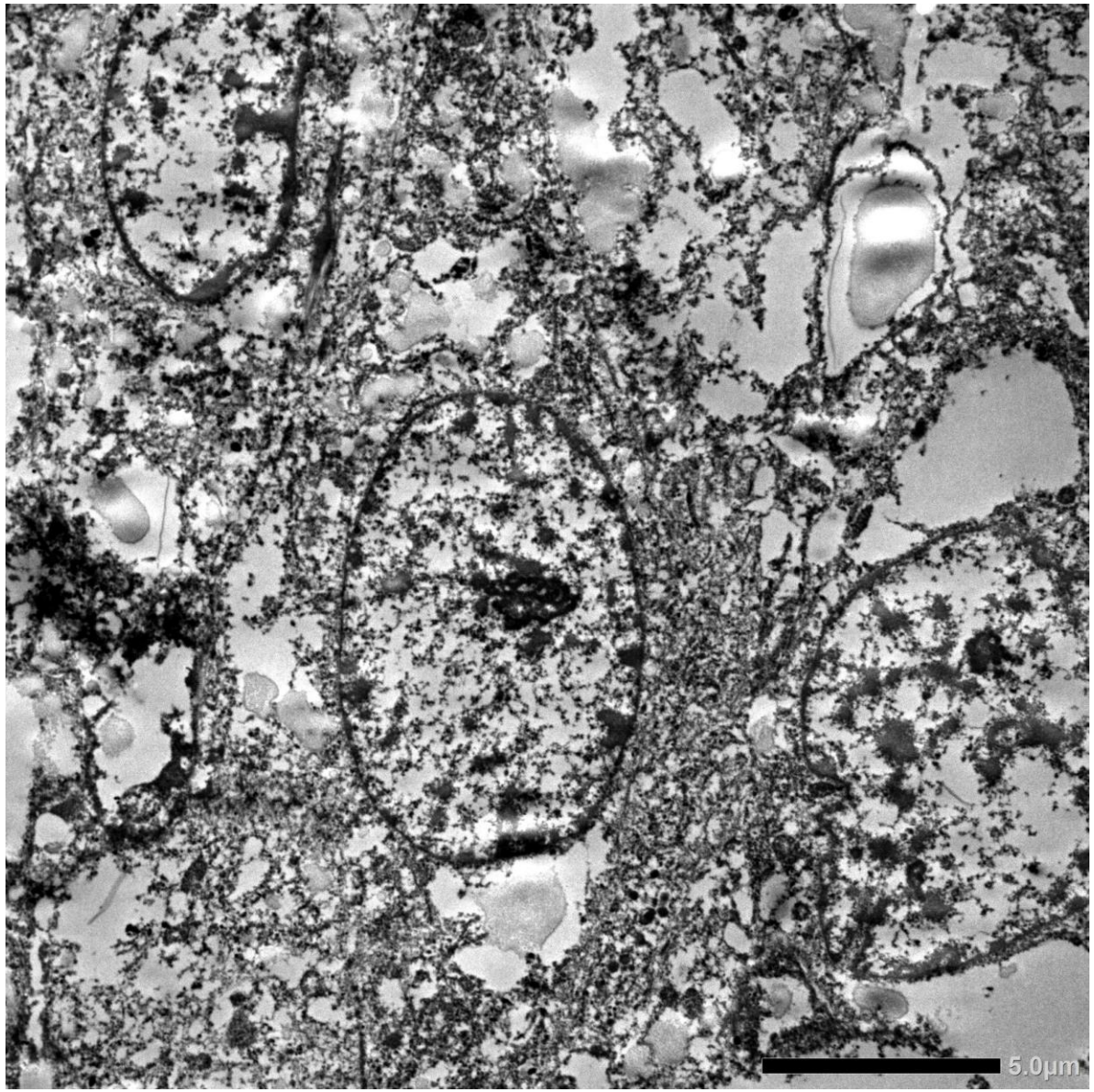
Local recurrence of malignant melanoma, clear cell type, in the right upper arm of an 88 y-o male patient.  The recurrent tumor consists of solid-growing atypical cells with vacuolated cytoplasm (Toluidine blue in a thick section for EM study).



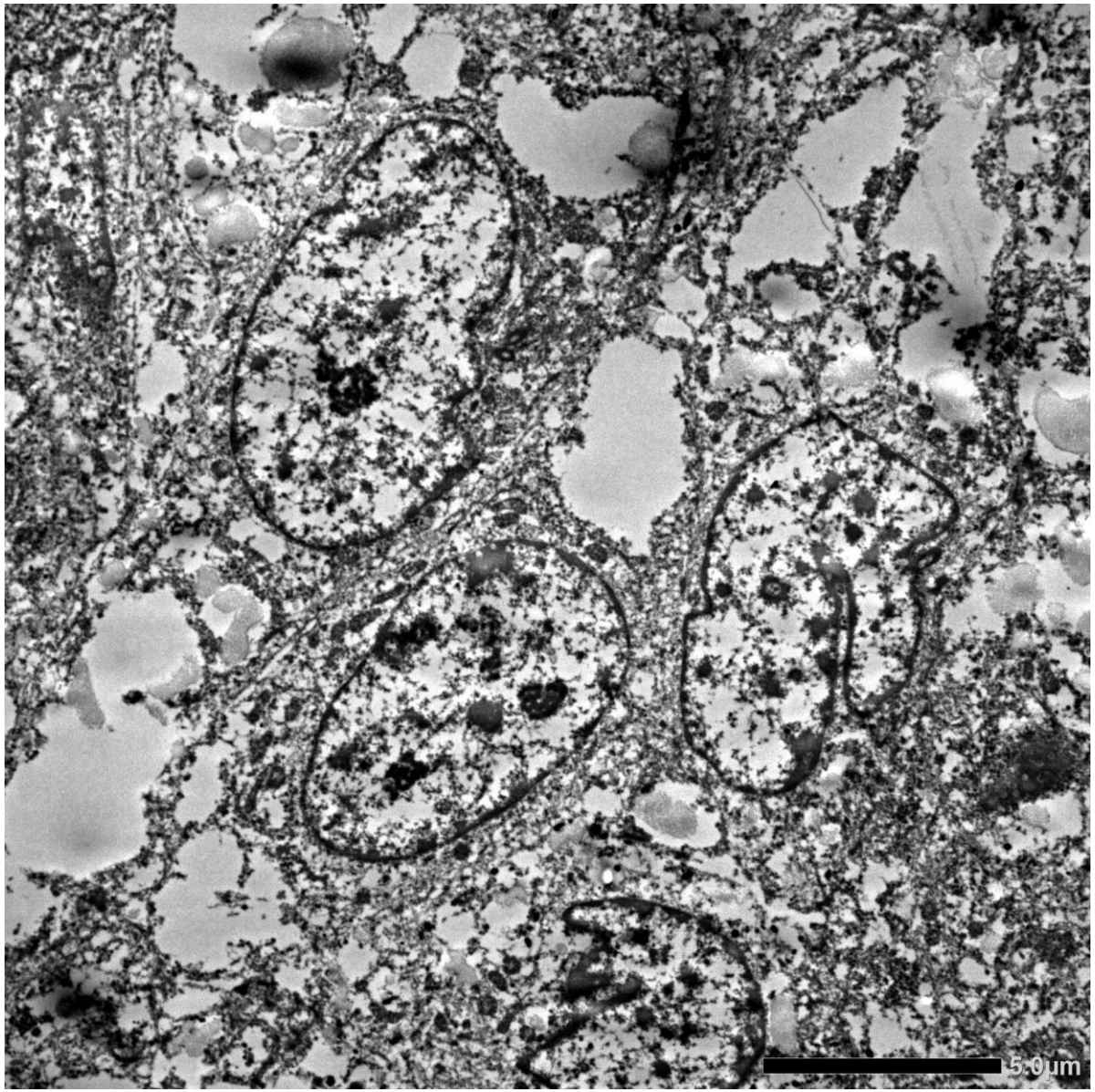

Ultrastructure of the local recurrent malignant melanoma, clear cell type, in the right upper arm of an 88 y-o male patient.  In the cytoplasm of the tumor cells, electron-dense melanosomes are focally clustered, and fat droplets are dispersed. (EM-1).




Ultrastructure of the local recurrent malignant melanoma, clear cell type, in the right upper arm of an 88 y-o male patient.  High-powered view of melanosomes is shown. Ovoid electron-dense granules measure around 200-250 nm (EM-2).




Ultrastructure of the local recurrent malignant melanoma, clear cell type, in the right upper arm of an 88 y-o male patient.  In the cytoplasm of the tumor cells, fat droplets are dispersed (EM-3).




Ultrastructure of the local recurrent malignant melanoma, clear cell type, in the right upper arm of an 88 y-o male patient.  In the cytoplasm of the tumor cells, fat droplets are dispersed (EM-4).