

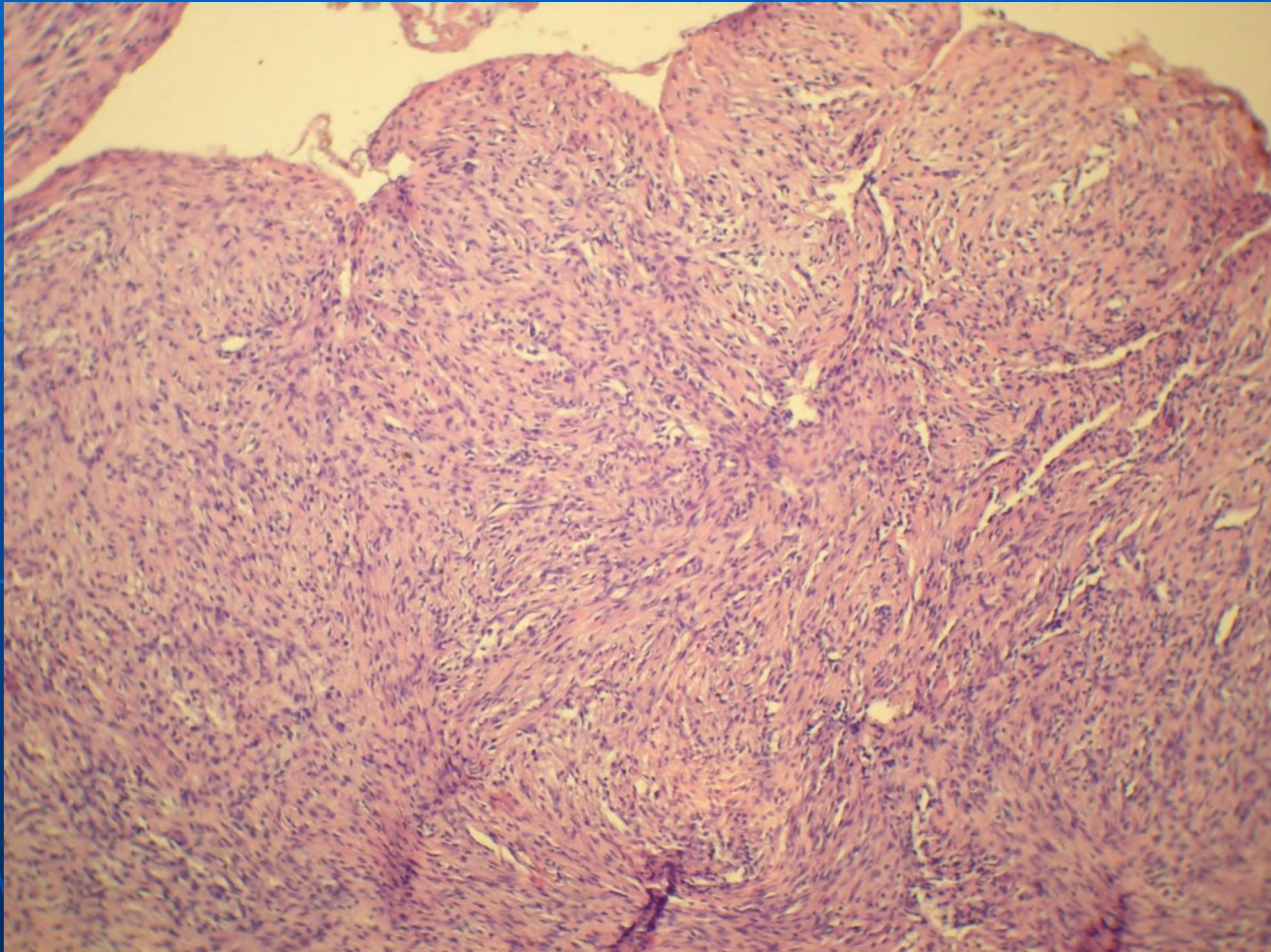
SOFT TISSUE TUMORS

- The histological classification of soft tissue tumors combines more than 50 variants of tumors and is based on generally accepted criteria, according to which there are:
 - • benign tumors of mesenchymal derivatives, whose name is formed from the root of the name of the tissue and the suffix "-oma" (fibroma, lipoma, etc.);
 - • malignant tumors - sarcomas.

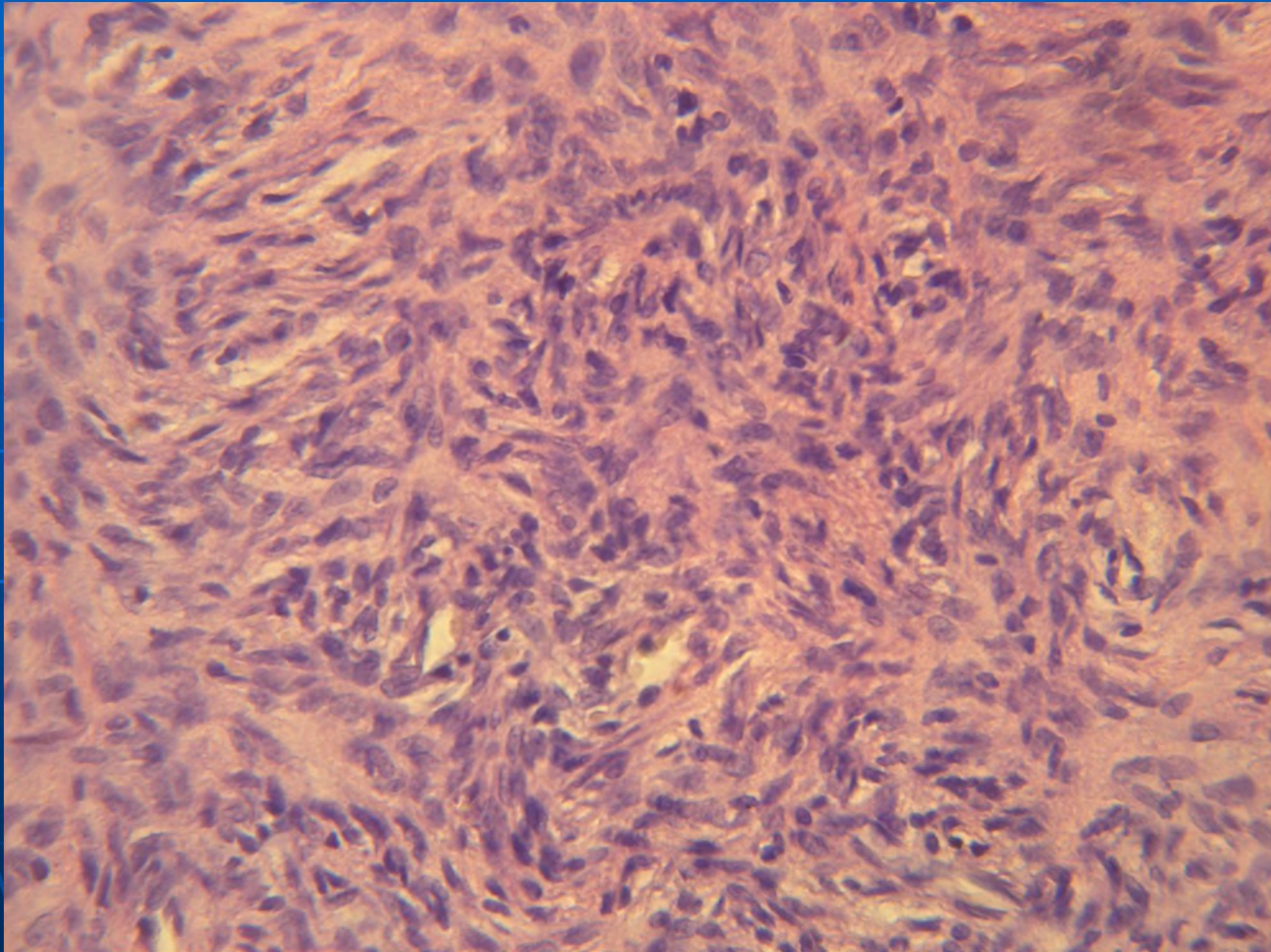
According to histogenesis (depending on the source tissue) and cytogenesis (depending on the source cell), tumors are distinguished:

- from adipose tissue (adipocyte) - lipoma and liposarcoma;
- from fibrous tissue (fibroblast and myofibroblast) - fibroma and fibrosarcoma;
- from fibrohistiocytic elements - histiocytoma and pleomorphic sarcoma;
- from smooth muscle tissue - leiomyoma and leiomyosarcoma;
- from pericytes - pericytomas;
- from skeletal muscles - rhabdomyoma and rhabdomyosarcoma;
- from vascular tissue - angioma and angiosarcoma;
- from cartilage and osteoid tissue - soft tissue chondroma and sarcoma;
- from a primitive mesenchymal cell - a variety of mesenchymomas, myxomas;
- hamartomas and their malignant counterparts.

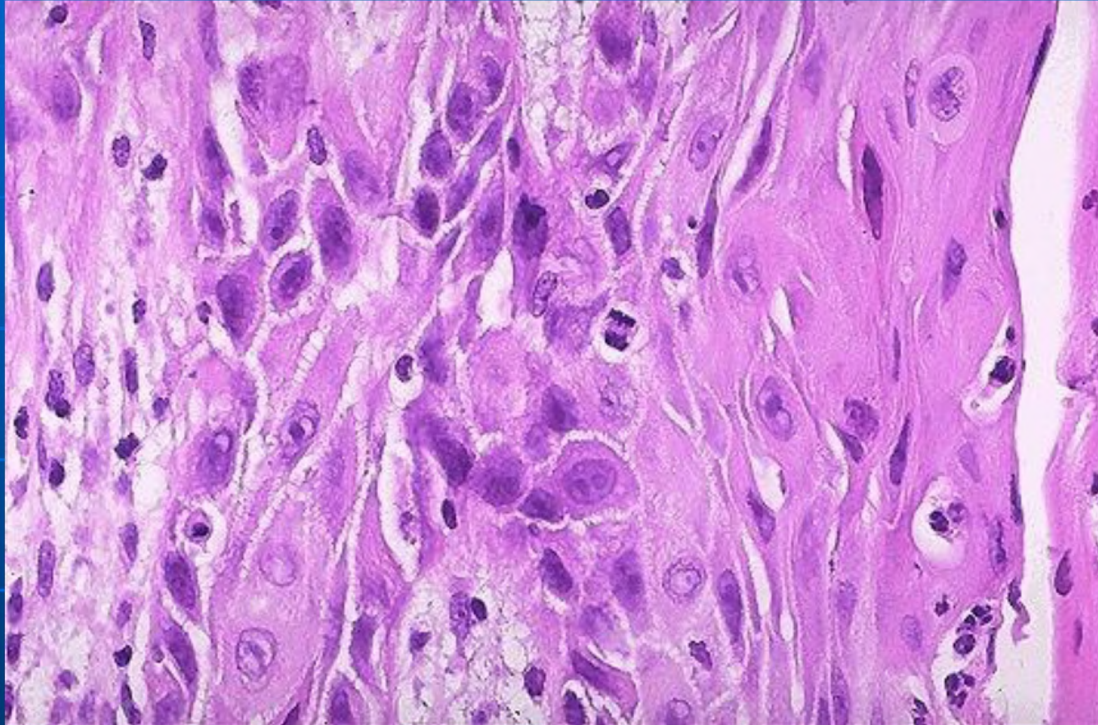
Angiofibroma



Fibroma

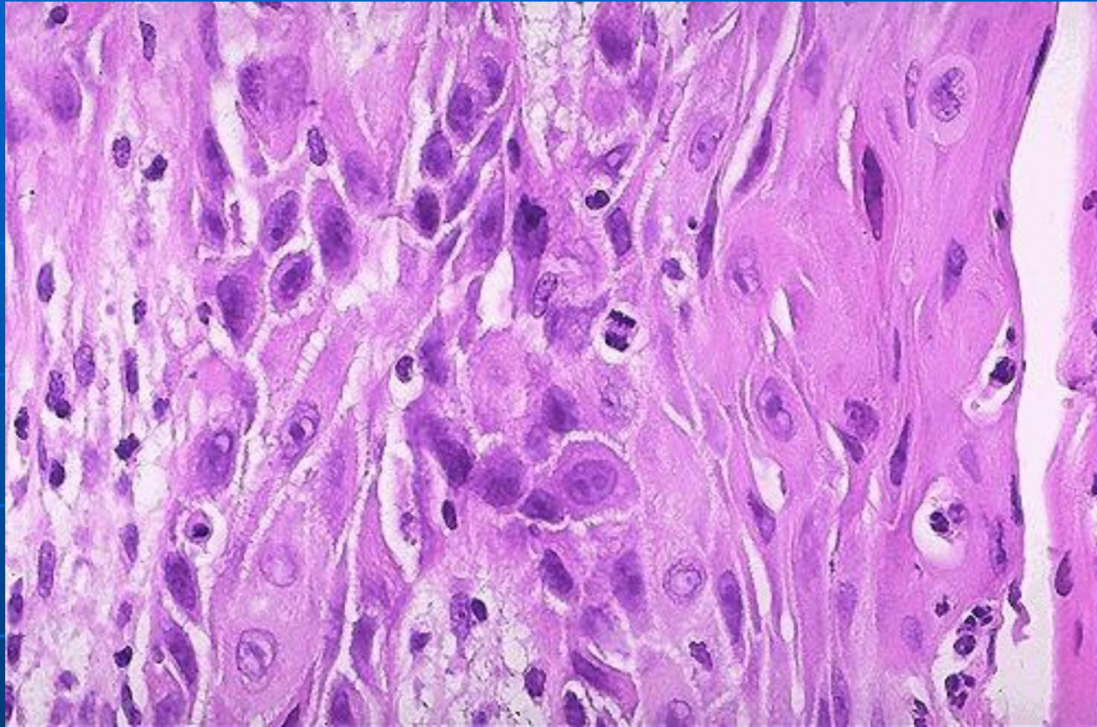


Sarcoma

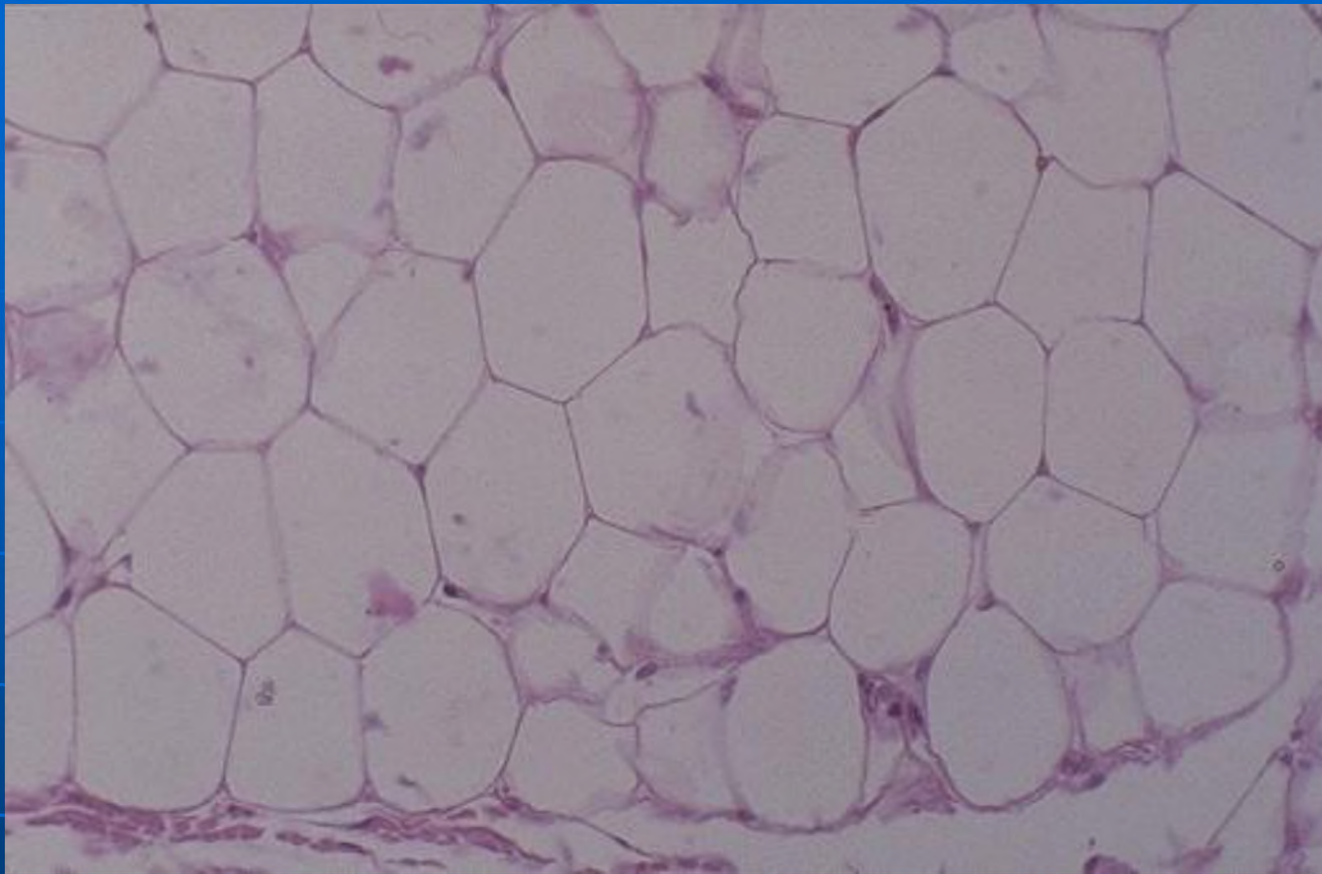


Both the cells and nuclei characteristically display pleomorphism - variation in size and shape.

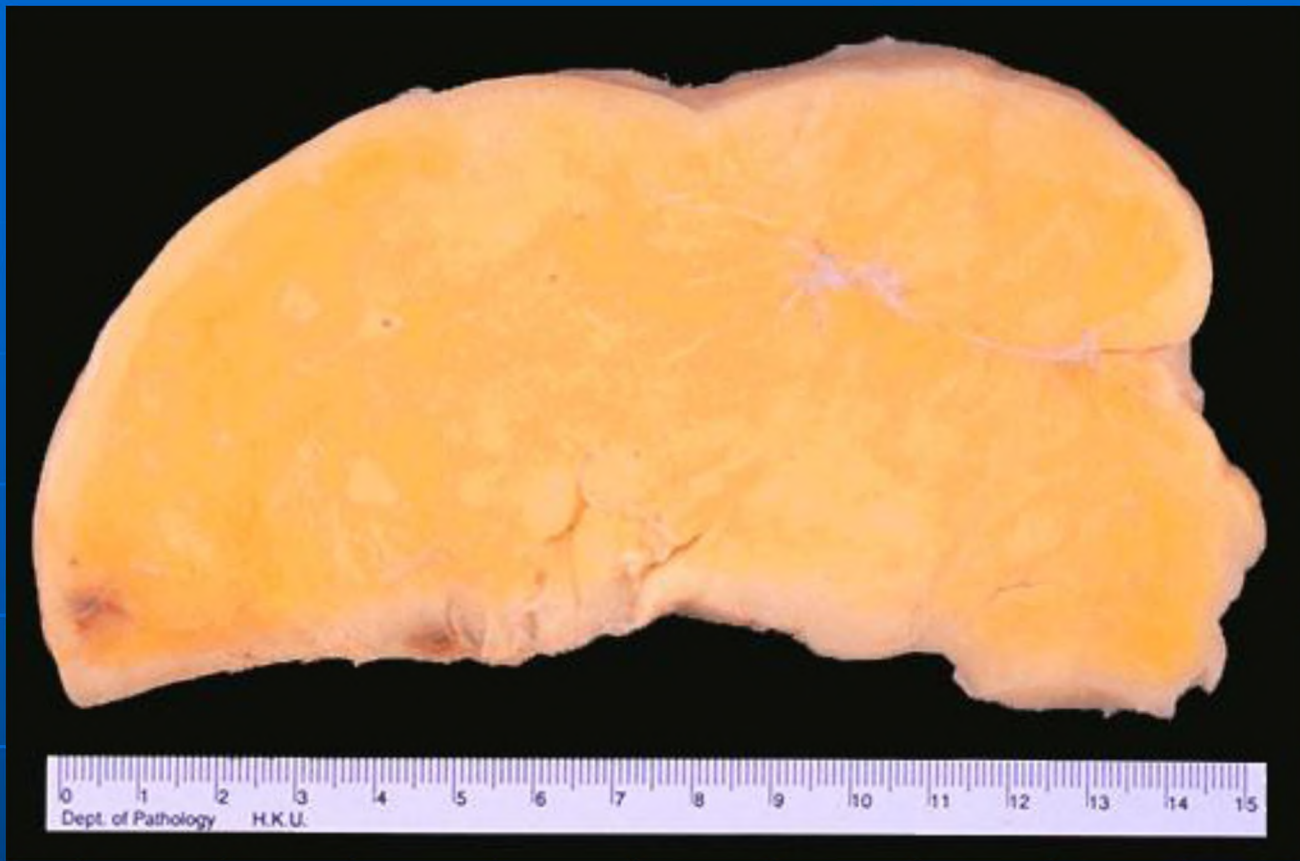
Sarcoma. Rate of growth.



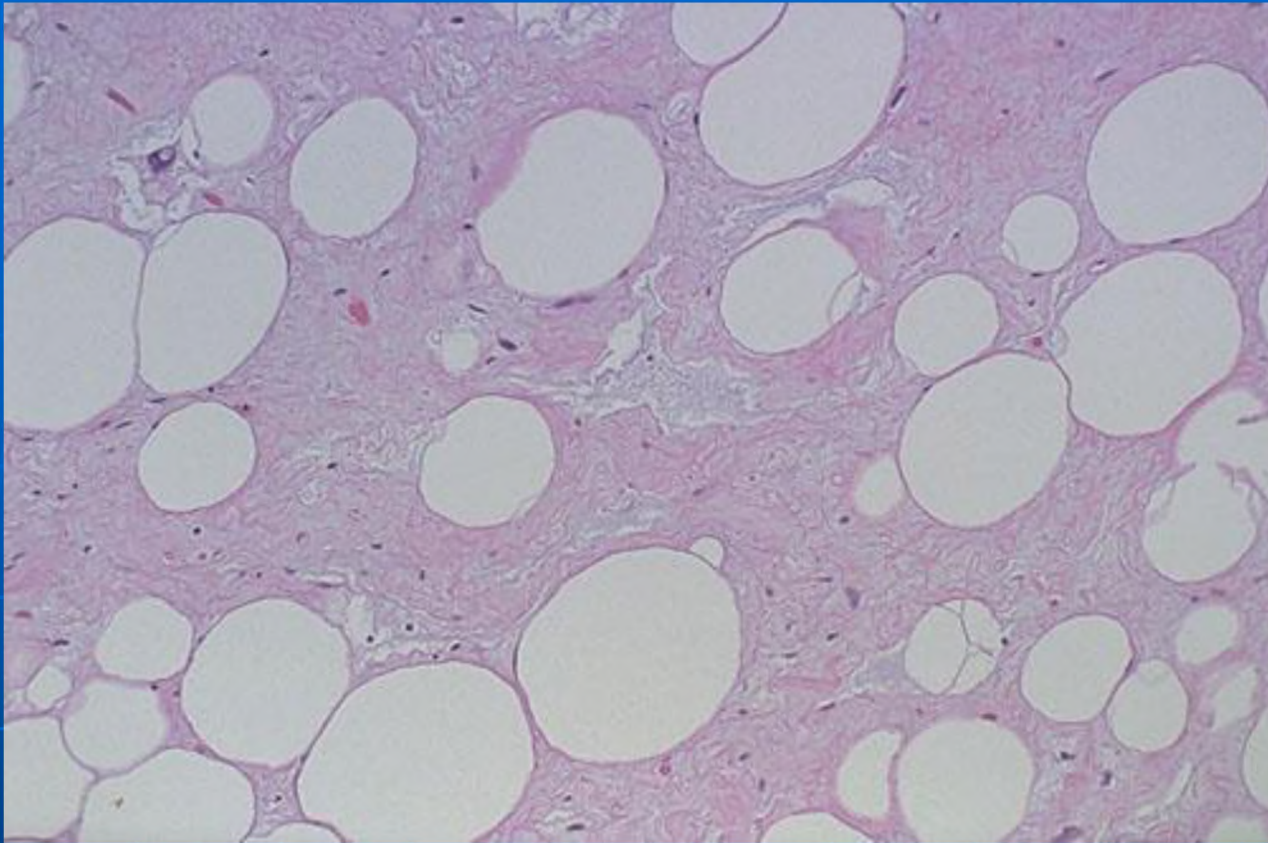
Undifferentiated tumors usually possess large number of mitosis, but it should be noted, however, that the presence of **mitosis** does not necessarily indicate that a tumor is malignant or that the tissue is neoplastic. More important as a morphologic feature of malignant neoplasia are **atypical mitotic figures** sometimes producing tripolar, quadripolar or multipolar spindles.



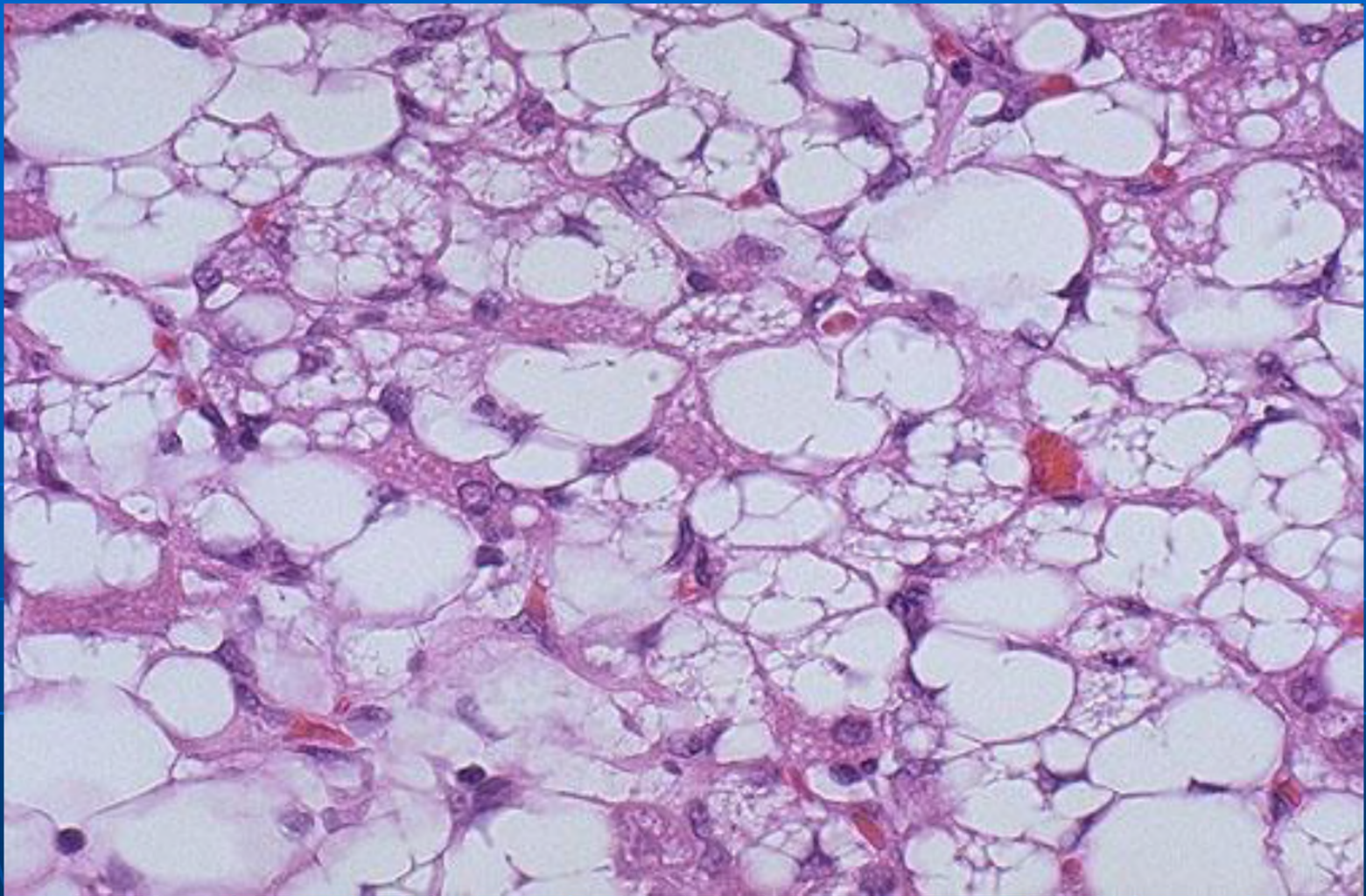
- This is a lipoma. It is benign and tends to enlarge very slowly over time. Note how it is indistinguishable microscopically from normal adipose tissue. It is a neoplasm because grossly it formed a mass lesion.



- This is a liposarcoma arising in the region of the lower thigh posterior to the knee. Note that it is a large, bulky mass. There is enough differentiation to provide a yellowish hue (suggesting adipose tissue differentiation) to this fleshy tumor mass.

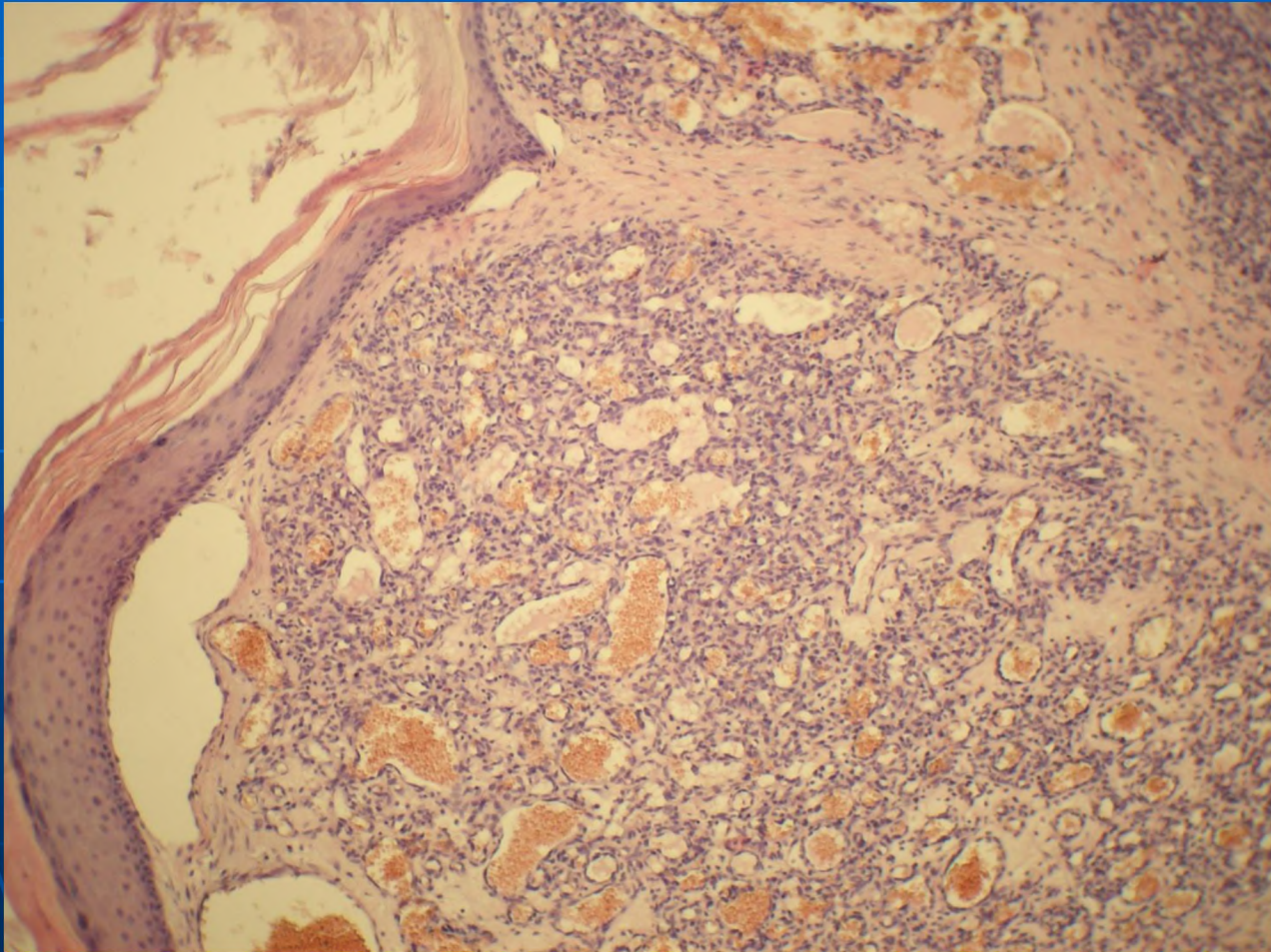


- Here is a low grade liposarcoma. There are still recognizable cells with lipid, resembling steatocytes, but there is more stroma and some cells have larger nuclei. Of course, grossly this would tend to be a larger mass than a benign lipoma.



- At high magnification, the lipoblasts in this liposarcoma are visible.

Hemangioma



HIV. Kaposi's sarcoma.



- Kaposi's sarcoma (skin).

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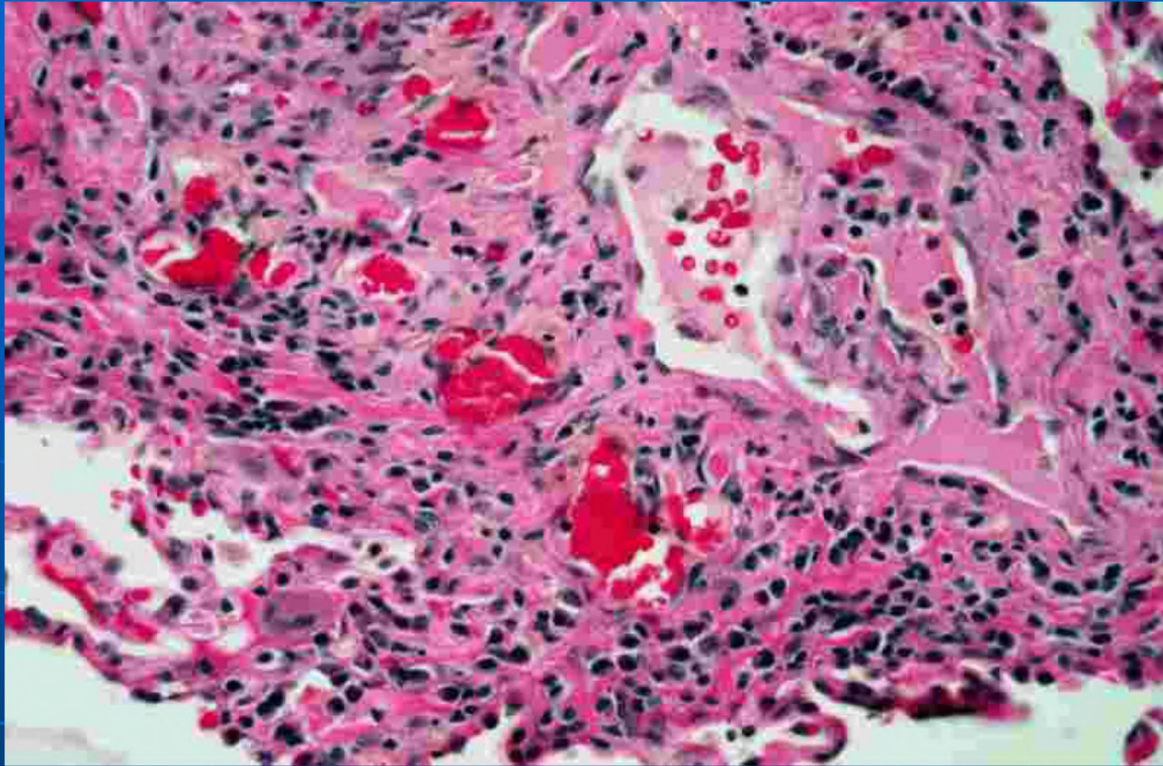
HIV. Kaposi's sarcoma.



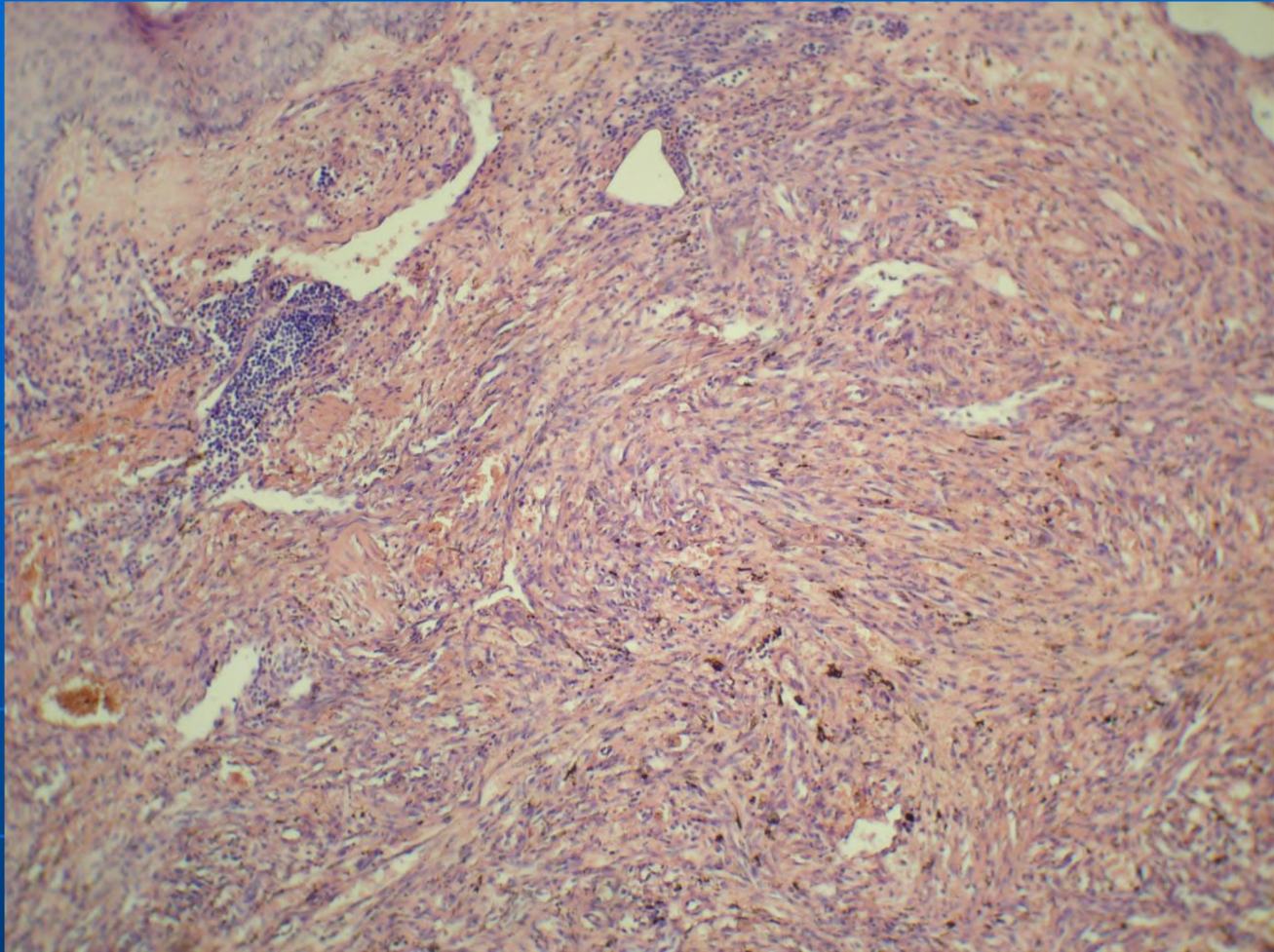
- Skin showing AIDS-associated Kaposi's sarcoma

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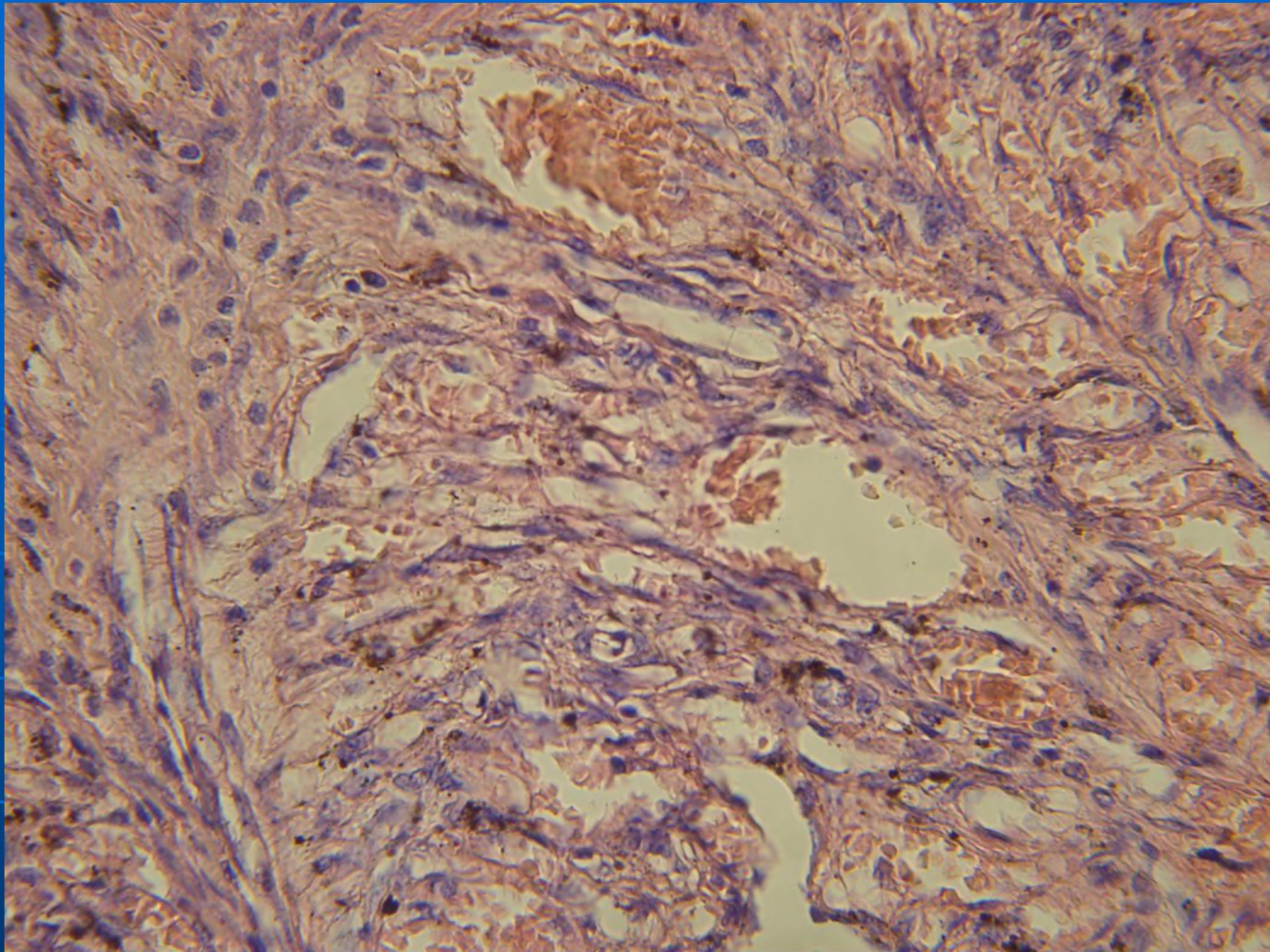
HIV. Kaposi's sarcoma.



- The perivenular infiltrate of Kaposi sarcoma shows a mixture of spindle cells, inflammatory cells, and ectatic vascular spaces. *The Johns Hopkins Autopsy Resource (JHAR). Image Archive.*



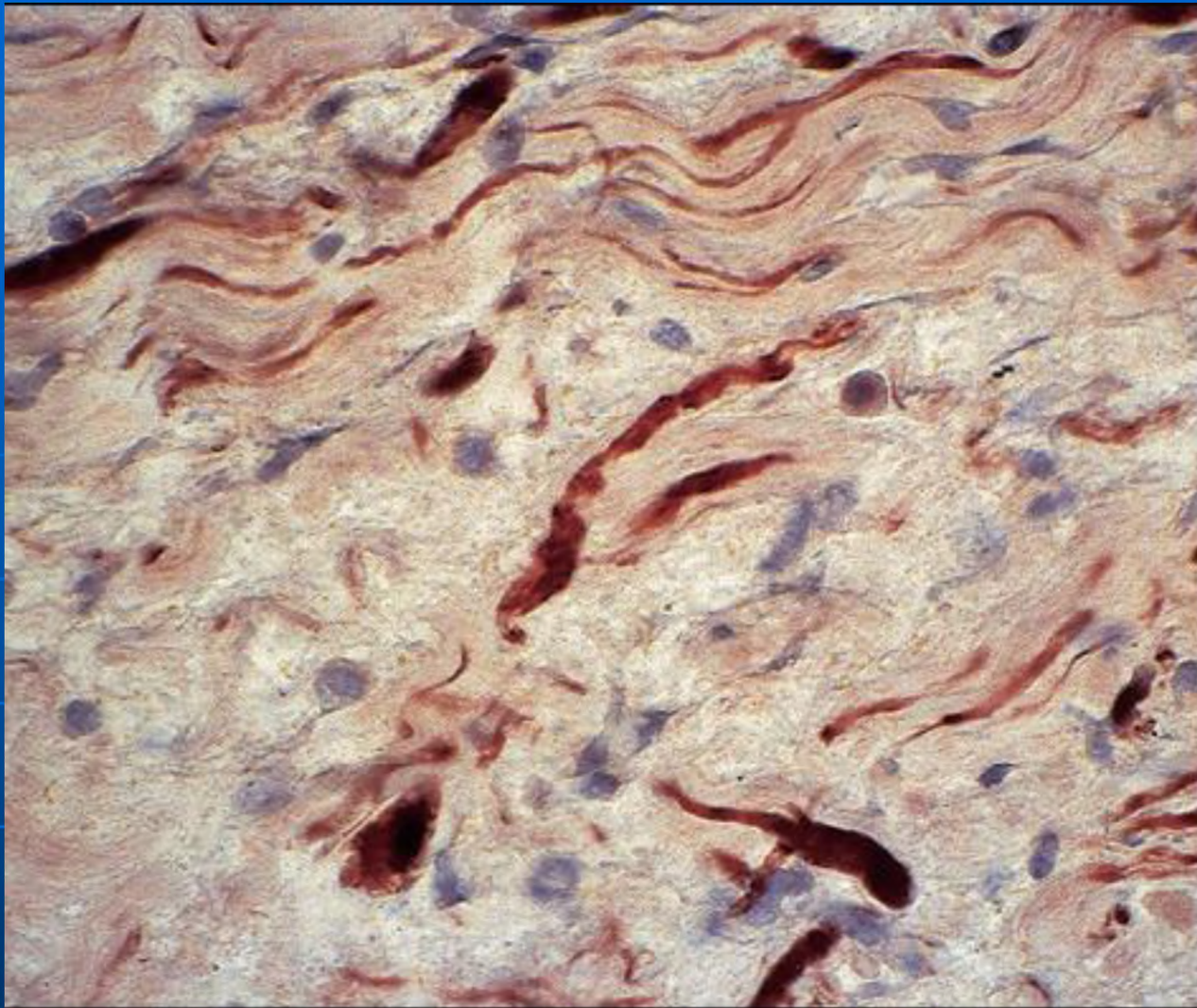
- Kaposi sarcoma shows a mixture of spindle cells, inflammatory cells, ectatic vascular spaces and deposition of hemosiderin.



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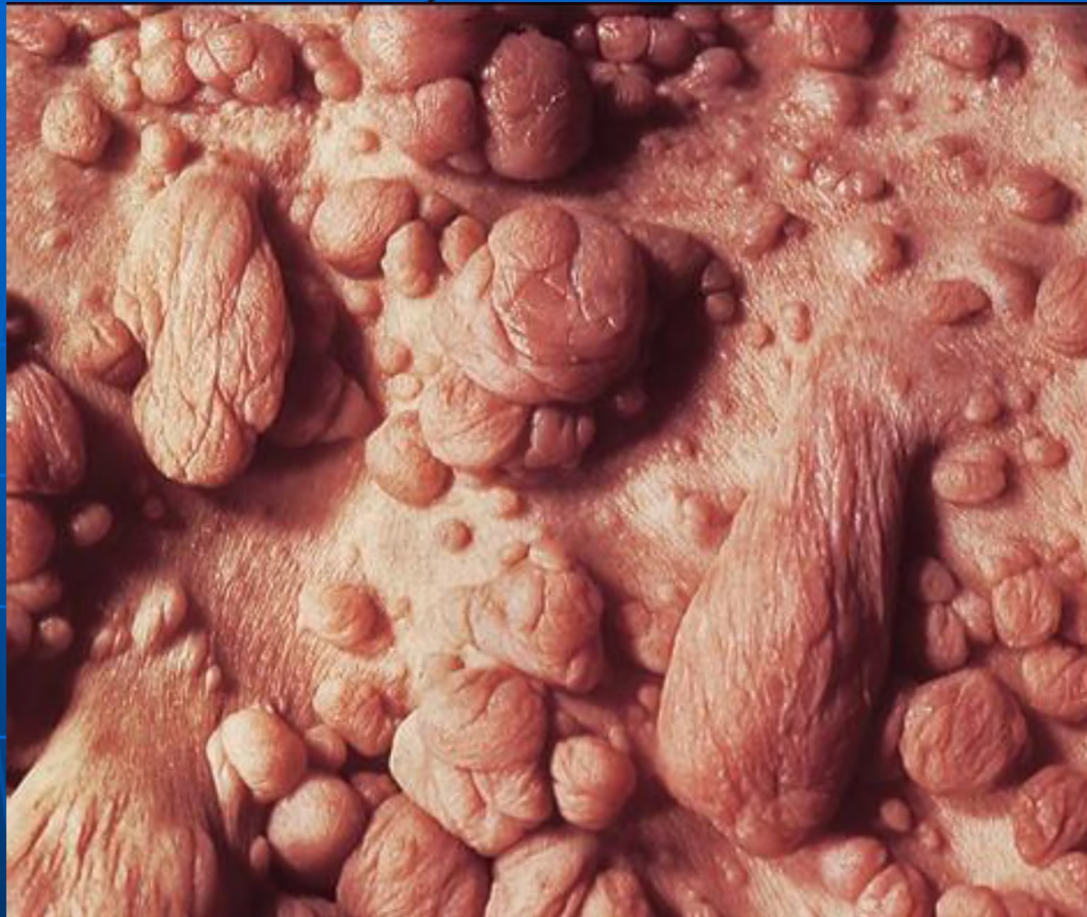
Neurofibroma





- S-100 antigen, which controls the cell cycle and binds Ca^{2+} . S-100 is detectable in Schwann cells, melanocytes, melanomas, tumors of the neural crest, lipocytes, and in liposarcomas.

Neurofibromatosis, type 1 (von Recklinghausen disease), ICD-10 Q85.0



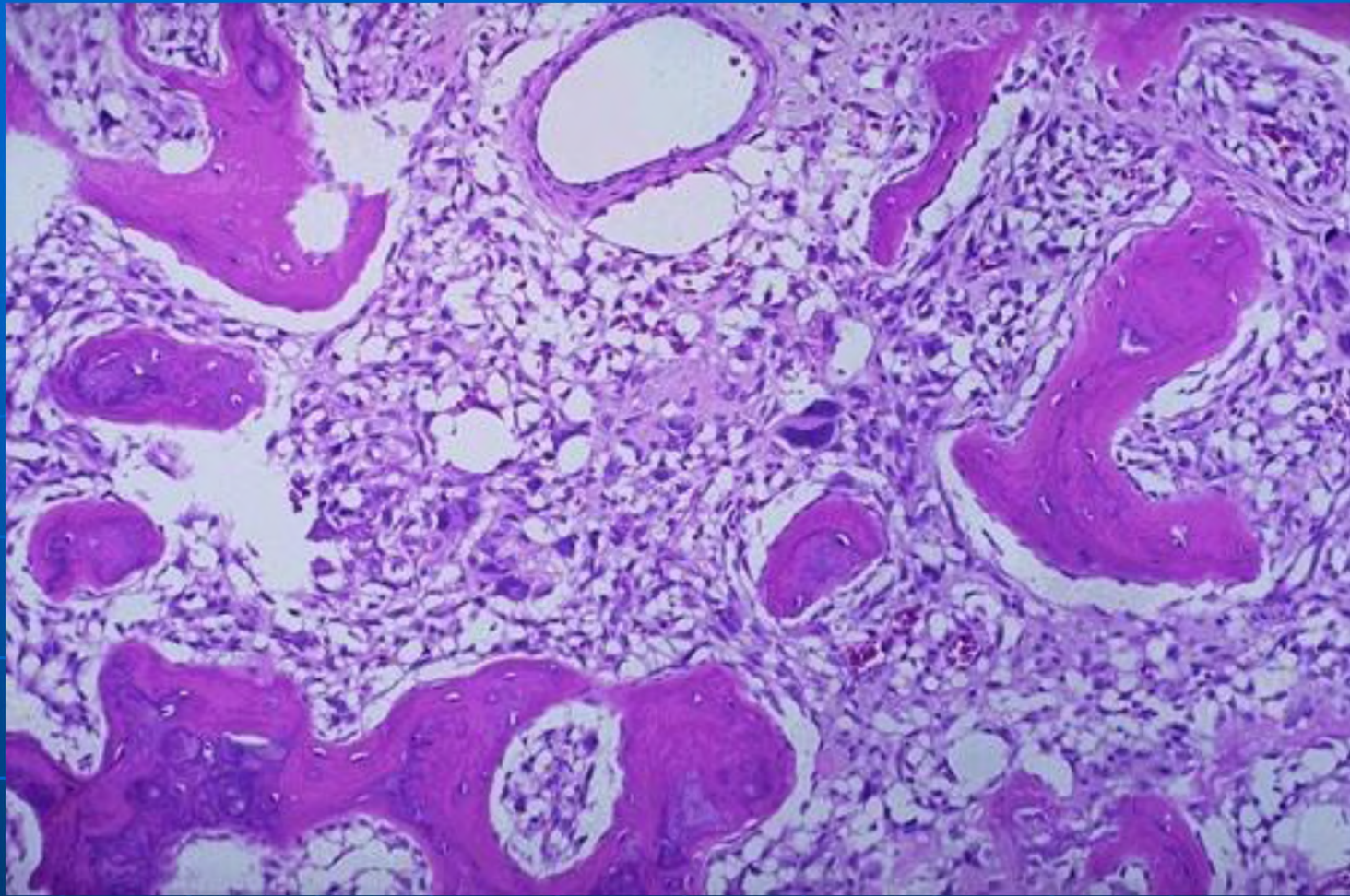
In half of the cases, the disease is hereditary, in half - the result of spontaneous mutation, characterized by the appearance of multiple pigmented spots of the color "coffee with milk", neurofibromas, CNS tumors, bone abnormalities, changes in the iris.

Here is an osteosarcoma of bone. The large, bulky mass arises in the cortex of the bone and extends outward.

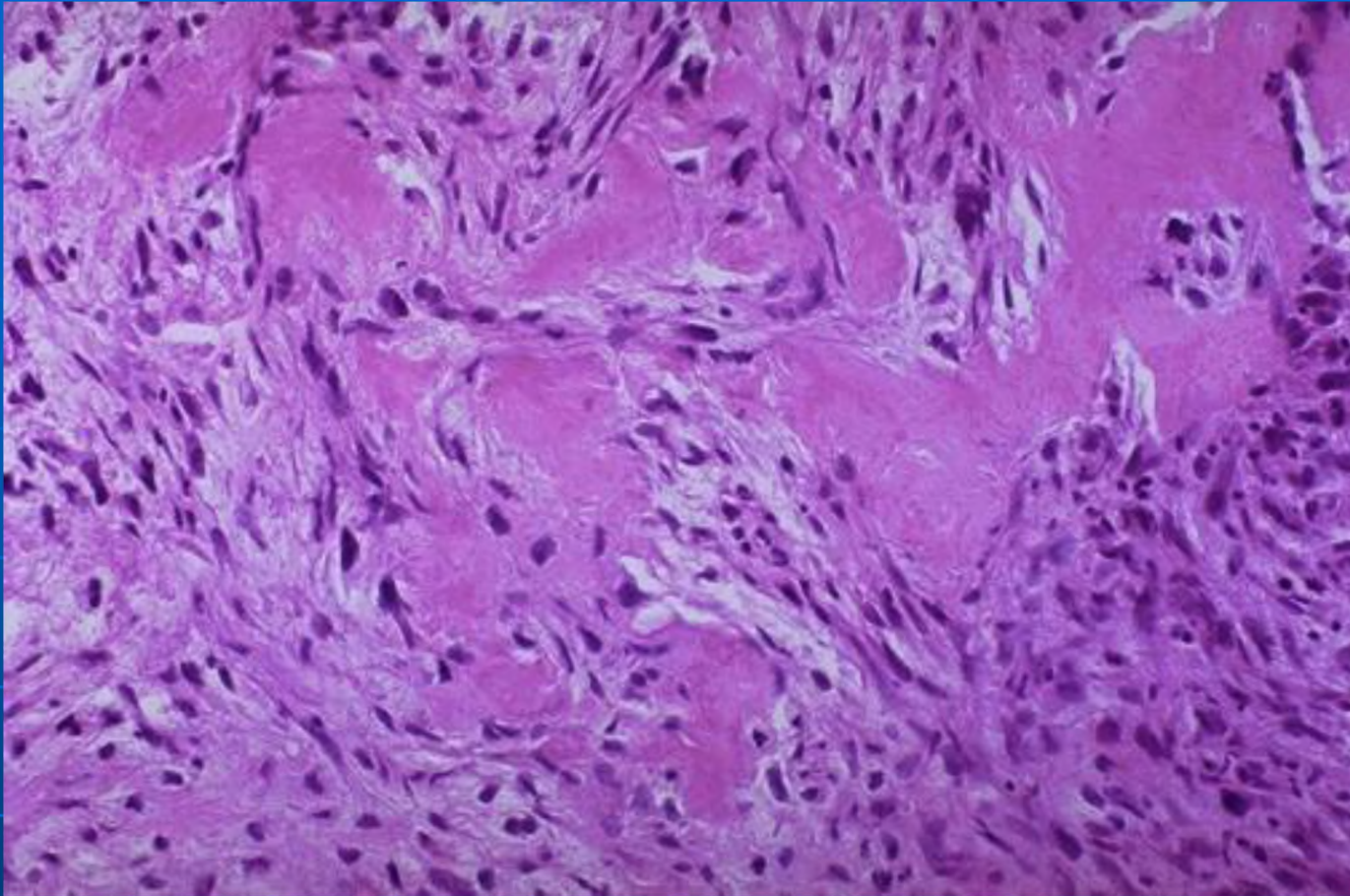




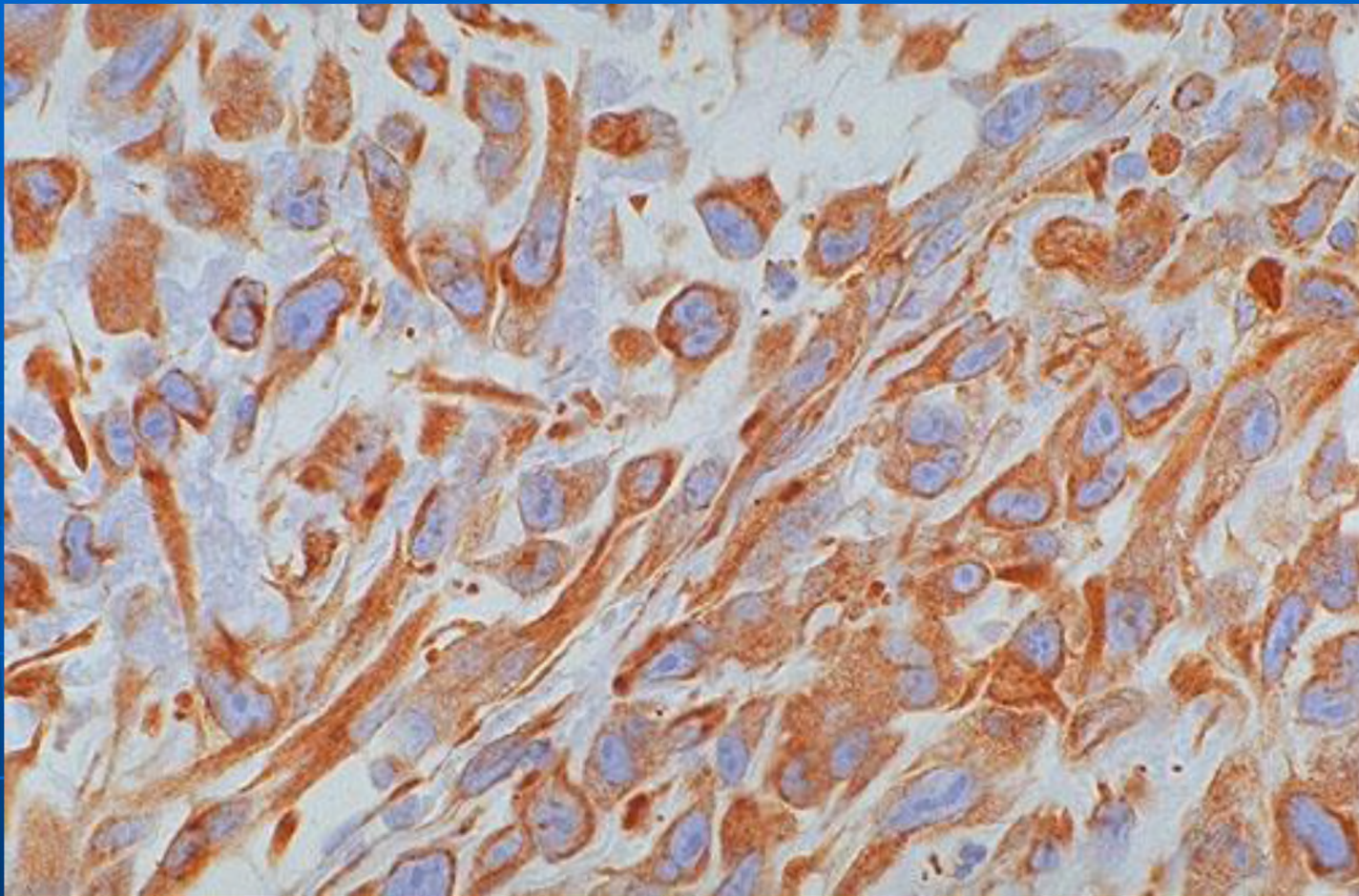
- This is a radiograph of an osteosarcoma involving the metaphyseal region of the upper tibia. The tumor erodes and destroys the bone cortex, extending into soft tissue where irregular tumor bone with calcification is seen. At the left, the periosteum is being lifted off.



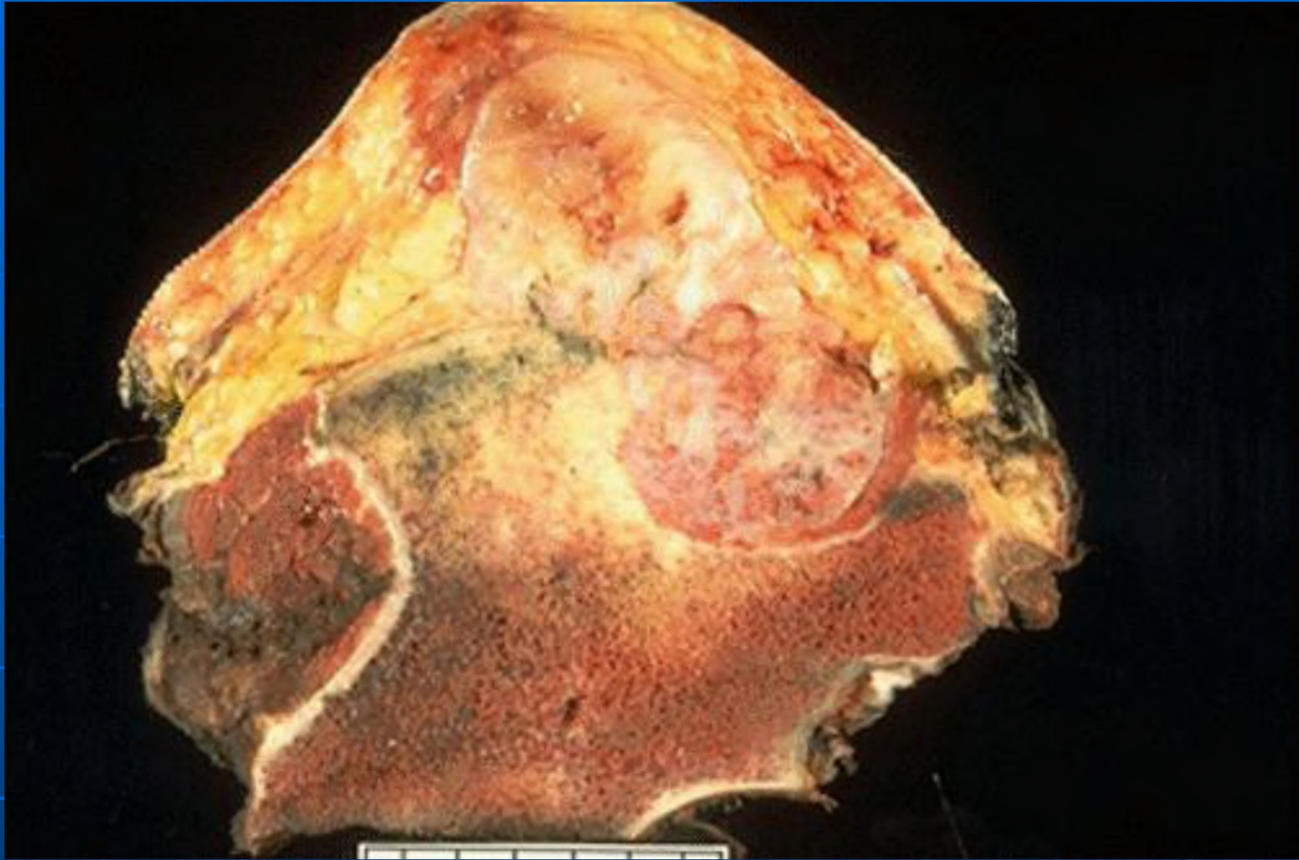
The microscopic appearance of an osteosarcoma is shown here. Sarcomas have very pleomorphic cells, often with a spindle shape. One large cell with very large nuclei is seen near the center. There are islands of reactive new bone.



The neoplastic spindle cells of osteosarcoma are seen to be making pink osteoid here. Osteoid production by a sarcoma is diagnostic of osteosarcoma.



- Positive staining in the cytoplasm of these neoplastic cells at high magnification with antibody to vimentin suggests that this is a sarcoma.



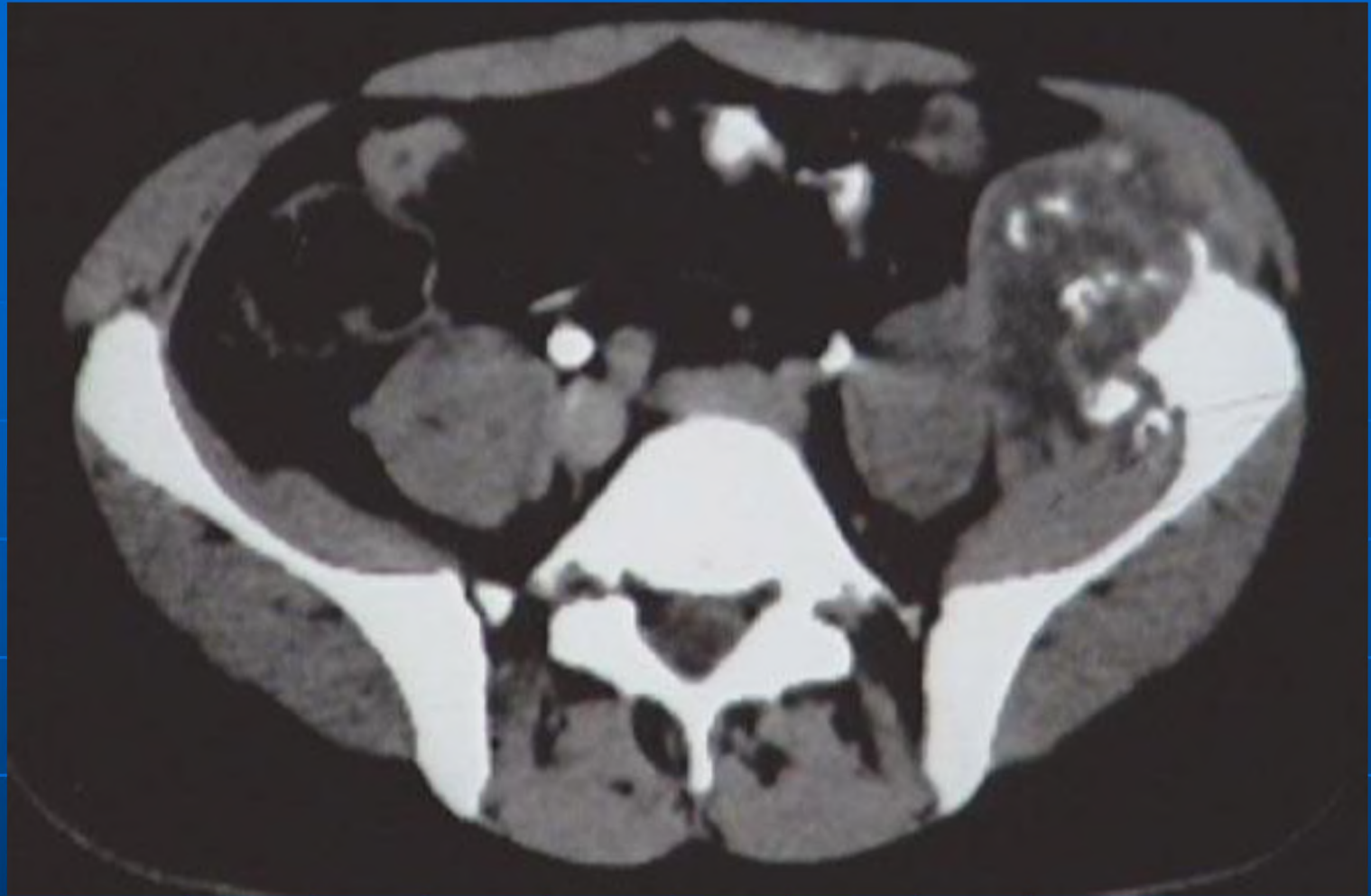
- Here is a chondrosarcoma involving the ischium of the pelvis. The tumor is composed of lobulated glistening white to bluish-white tissue that breaks through the cortex. In general, peripheral cartilagenous tumors (e.g., fingers) are benign and those arising in the central axial skeleton are malignant.



- This is a radiograph demonstrating a chondrosarcoma involving the left pelvic wing. There is an area of bone destruction accompanied by partial calcification, with no periosteal reactive new bone.



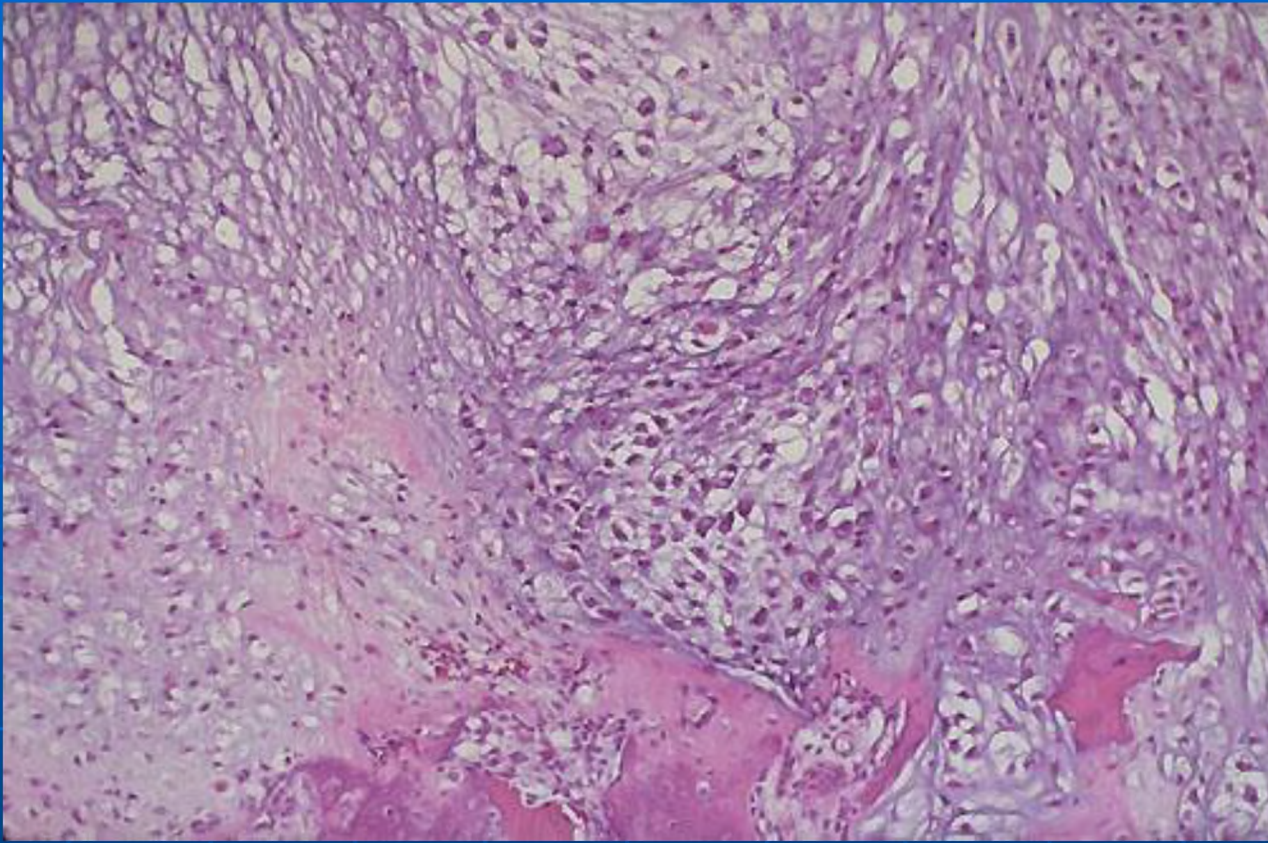
- Here is another example of a chondrosarcoma arising in the pelvis. Note the extensive nodules of white to bluish-white cartilaginous tumor tissue eroding and extending outward from the bone at the lower right. Chondrosarcomas can occur over a wide age range, and there is a slight male predominance. Many of them are slow growing, with symptoms present for a decade or more.



- This is a computed tomographic (CT) scan demonstrating a chondrosarcoma involving the left pelvic wing. There is an area of bone destruction accompanied by partial calcification, with no periosteal reactive new bone.



- This is a femur that is hemisected to reveal an irregular tumor mass composed of islands of bluish-white cartilaginous tissue. This is a chondrosarcoma, which has a predilection for involvement of metaphysis or diaphysis. As seen here, the cortex is thickened and eroded, but there is little periosteal reaction.



- This is the low power microscopic appearance of a chondrosarcoma. The tissue is recognizable as cartilage, and there are chondrocytes in clear spaces, but there is no orderly pattern. At the bottom, this neoplasm can be seen invading and destroying bone.



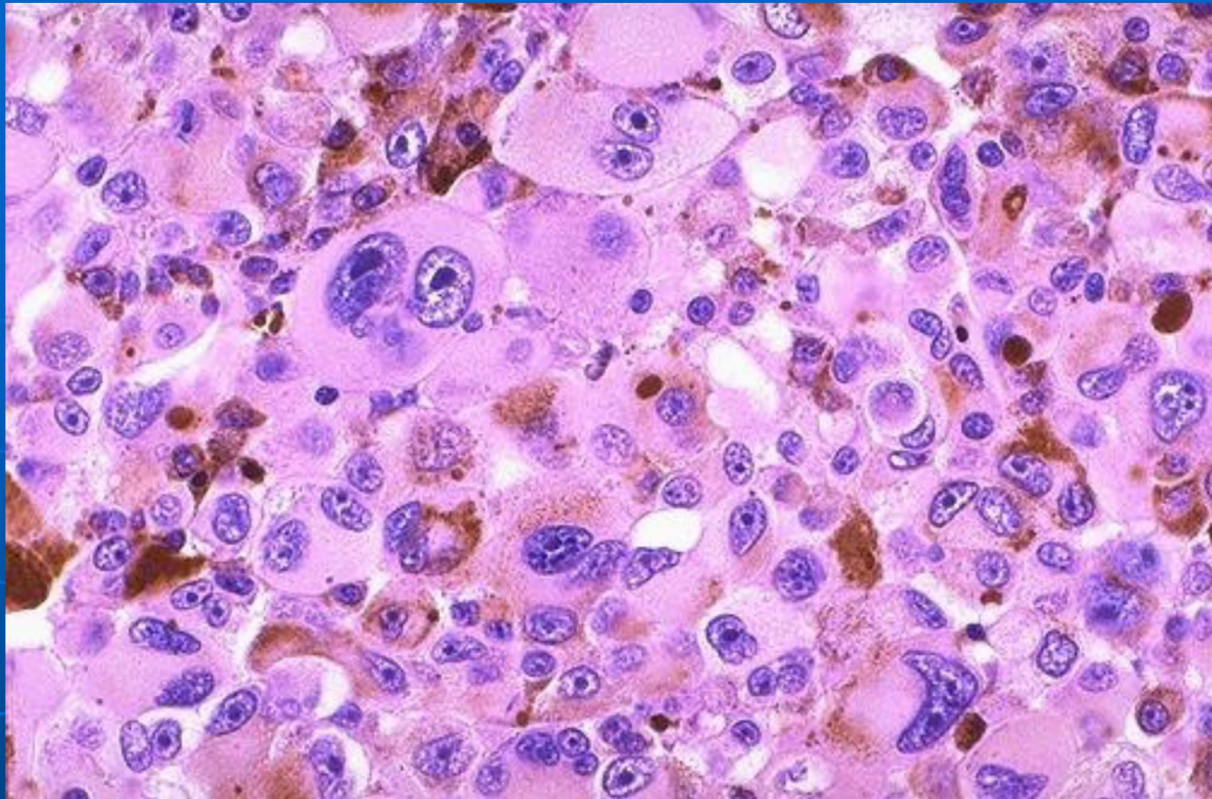
A malignant melanoma of the skin is shown here. The lesion is larger than a centimeter, has irregular borders, and irregular pigmentation, with one very dark area on the left. The prognosis of a melanoma correlates best with the depth of invasion. Larger lesions are more likely to have invaded further. Sun exposure in light-skinned persons leads to melanoma formation.



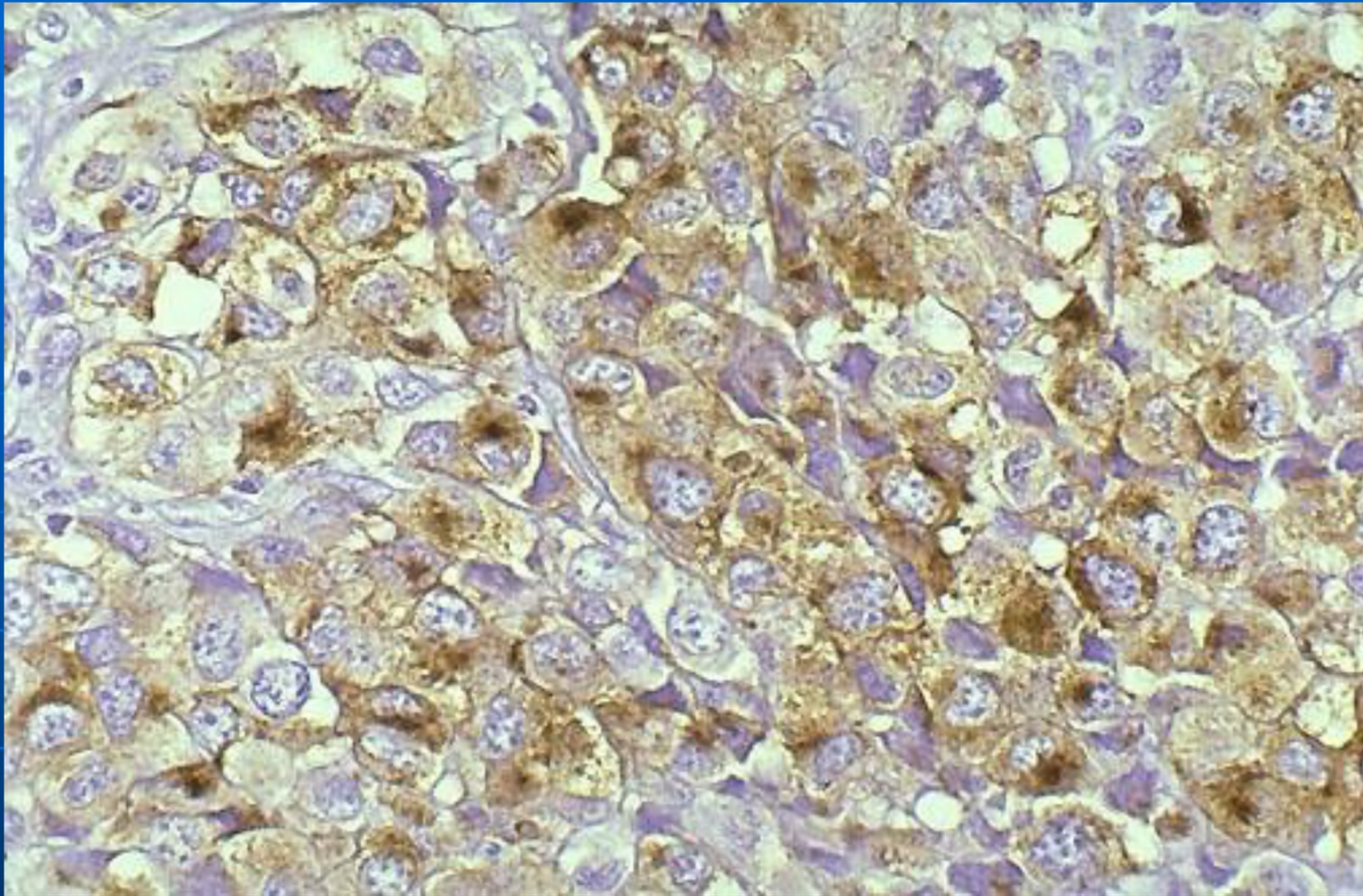
- Here is a melanoma excised with a wide margin. Although this lesion is hardly a centimeter in size, it shows irregular borders and irregular pigmentation.



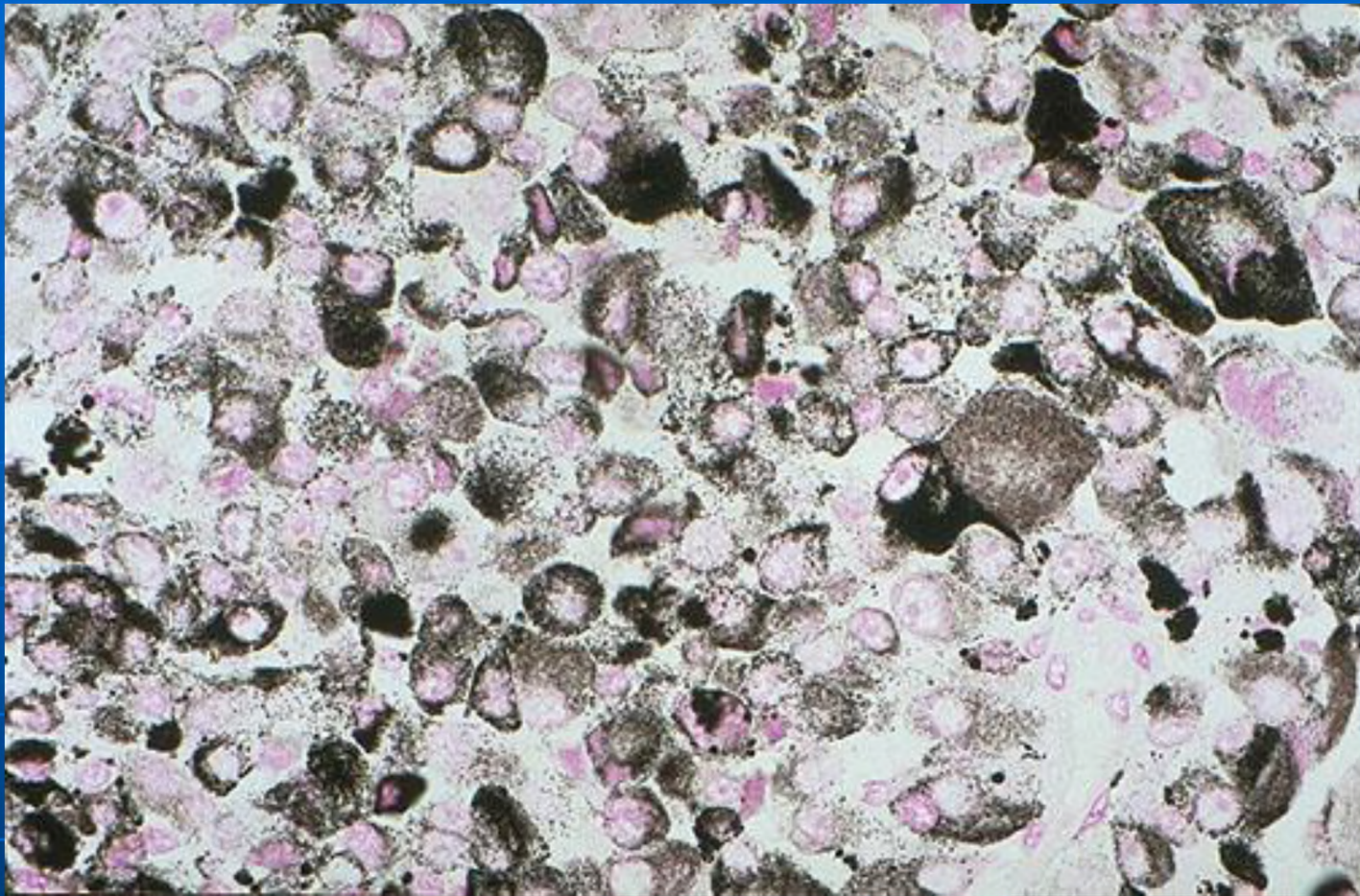
- This is a large nodular melanoma of the heel of the foot. The size of this lesion is such that the prognosis is poor. In fact, this lesion had already metastasized to lymph nodes and lung at the time of this excision.



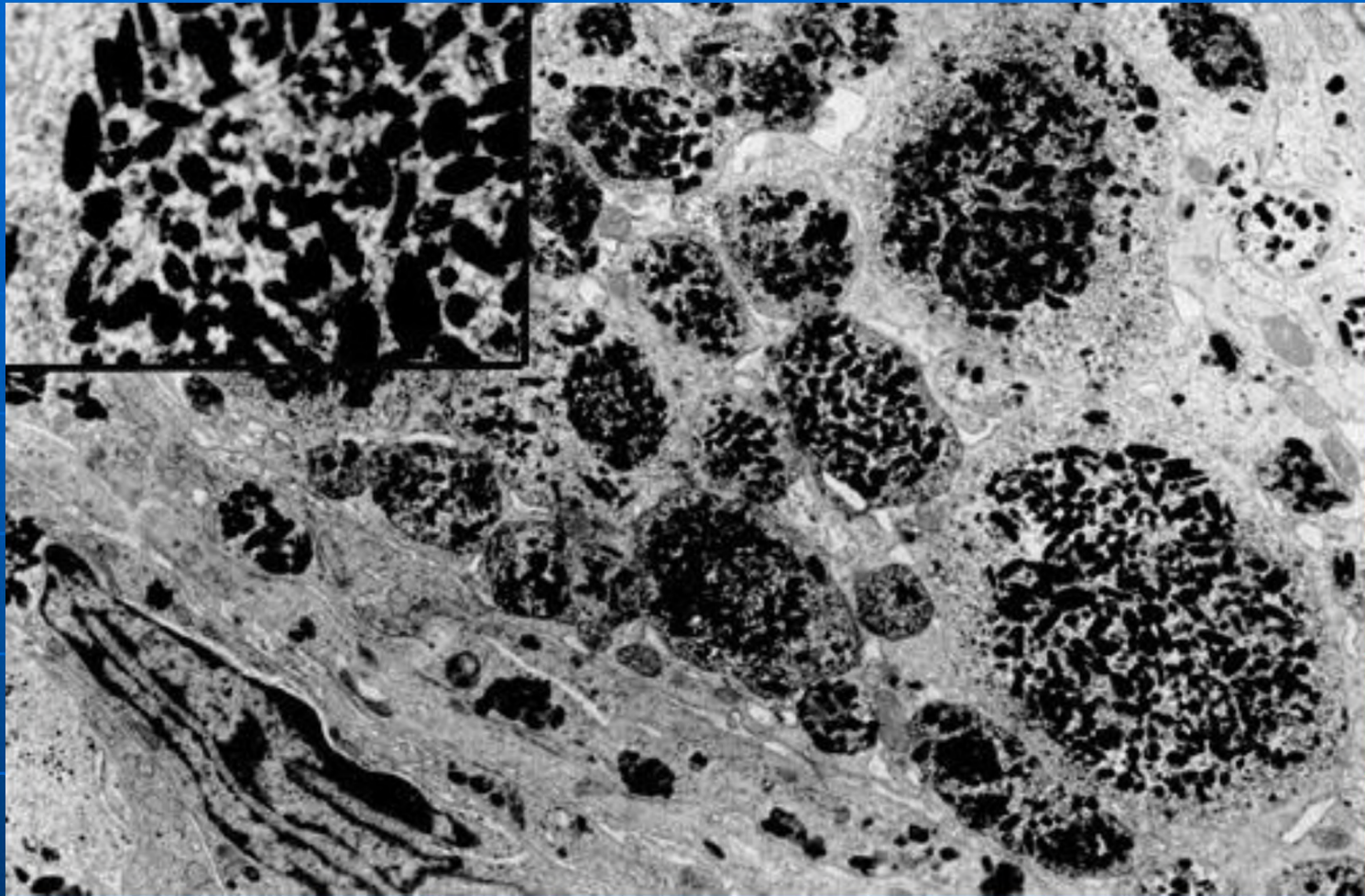
This is the microscopic appearance of melanoma. Large polygonal cells (or spindle cells in some cases) have very pleomorphic nuclei with prominent nucleoli. The neoplasm is making brown melanin pigment. A Fontana-Masson stain for melanin may help to detect small amounts of cytoplasmic melanin.



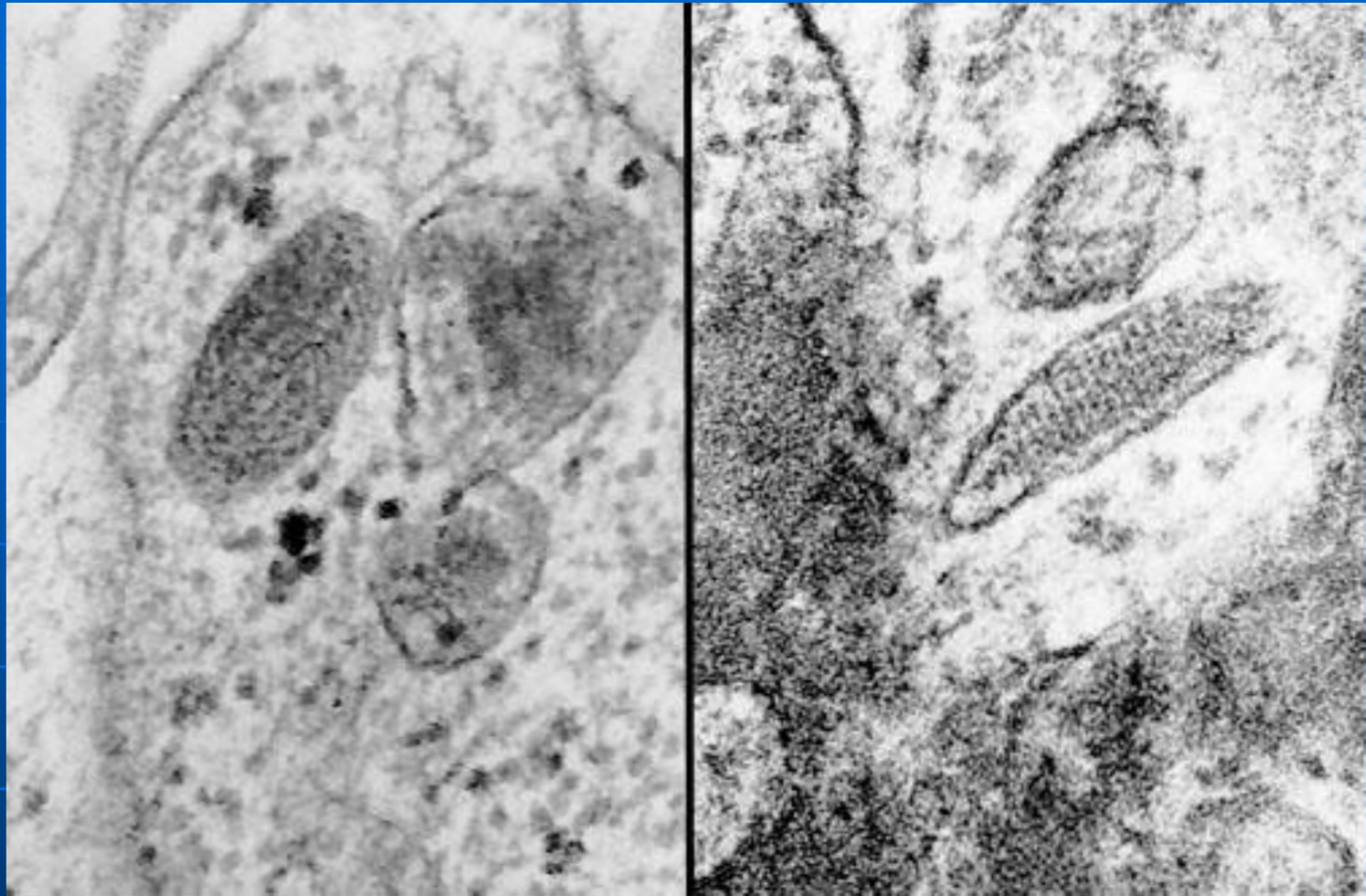
- The neoplastic cells shown here stain positively with HMB-45, suggesting that the primary neoplasm is a melanoma.



- A Fontana-Masson silver stain (melanin stain) will demonstrate a fine dusting of melanin pigment within the cytoplasm of the neoplastic cells of this malignant melanoma.



- Melanosomes are seen in this electron micrograph as dark oblong granules, seen best in the inset, from a malignant melanoma.



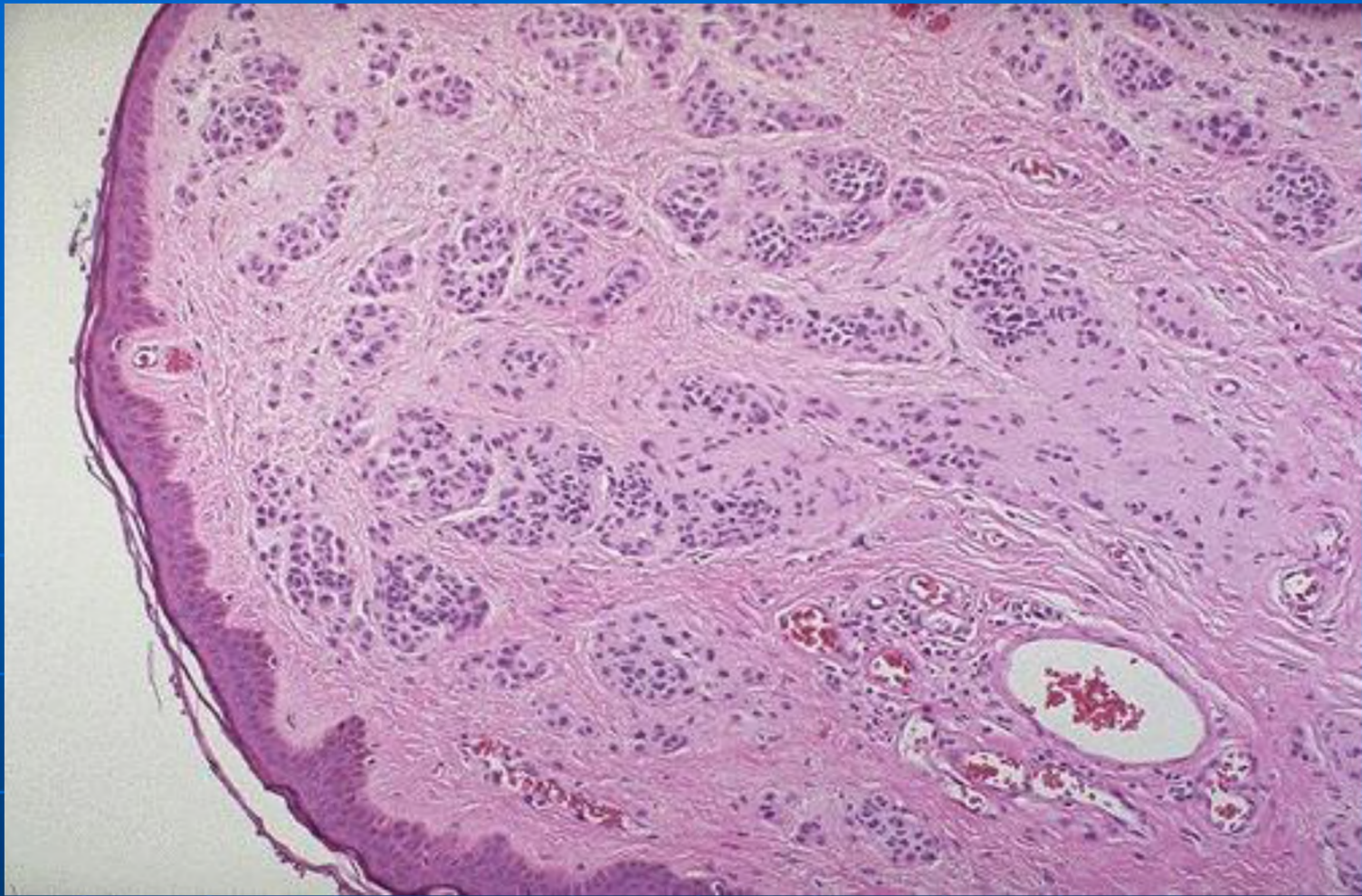
Sometimes a melanoma will not be well-differentiated enough to show the typical melanin pigmentation. By electron microscopy, it may be possible to prove the neoplasm is a melanoma if premelanosomes are seen. Two examples of premelanosomes are shown here as oval structures with a faint barred pattern.



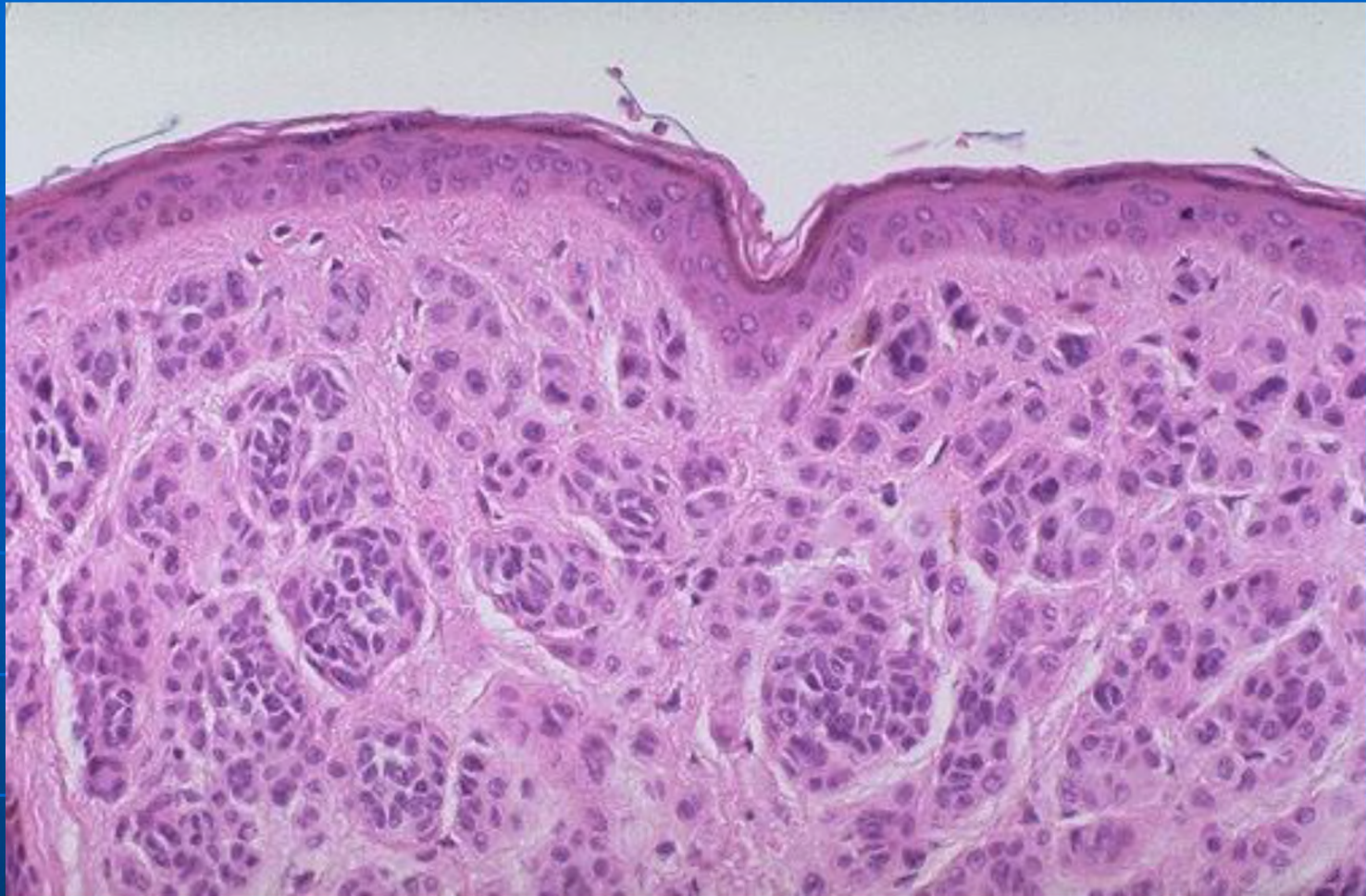
- By contrast, these are benign nevi. Small brown flat to slightly raised nevi are quite common in Caucasians. They are usually less than a centimeter in diameter.



- This is a larger flat 4 cm long pigmented nevus on the upper back. Such larger nevi are often congenital. They are sometimes called "cafe-au-lait" spots.

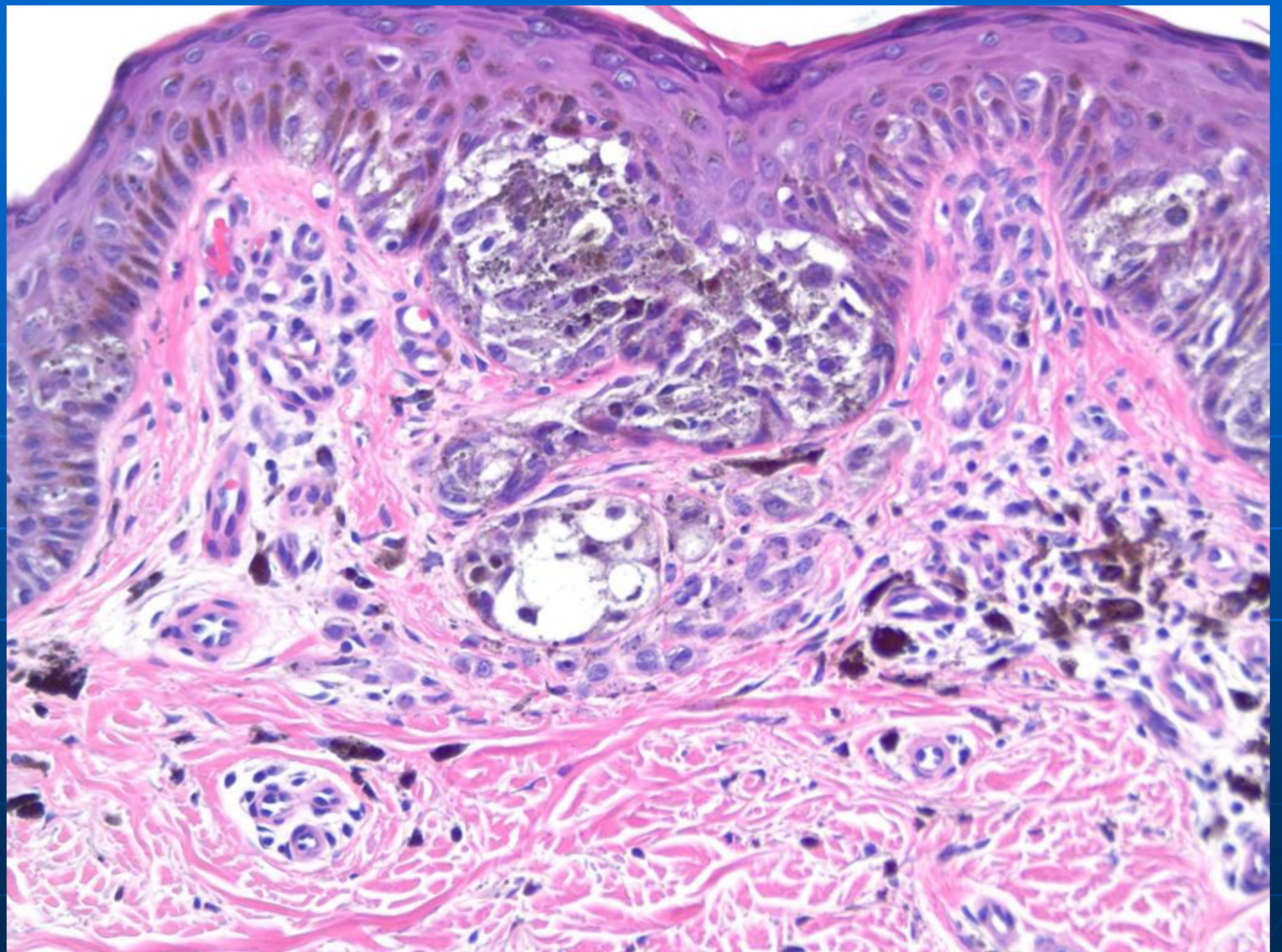


Here is the low power microscopic appearance of a benign pigmented nevus. Small amounts of dark pigment are seen near the skin surface. The small blue nevus cells can extend into the dermis and around adnexal structures, but this is not invasion.



- At high power, the benign nature of the nevus cells are seen below the epidermis. The cells are small and round and blue melanocytes that are in aggregates or sheets.





Thank You...