Clinical History:  
The patient is an 81 year old male who first presented in May 2019 with a sizeable mass on the left anterior thigh, which is grossly visible. The patient states that the mass is not painful and has been growing for the last two years. He has decided to seek medical attention due to his recent significant weight loss and fatigue. Upon palpation the mass is nontender. There is no weakness of the leg, no tingling or neurological defects, and no regional lymphoedema. In addition the patient has an extensive medical history including GERD, hypertension, multiple heart surgeries, BPH, hernias, and multiple melanoma excisions from the scalp and left hand in 2015. The patient has no family history of other malignancies or soft tissue masses. An ultrasound and MRI reveals the mass to be enhancing and located within the vastus medialis muscle, which is highly suspicious for malignancy. Multiple needle core biopsies are performed and a diagnosis of liposarcoma is determined. The patient then undergoes pre-op radiation therapy and a wide excision of the mass is performed in October 2019.

Gross Findings:  
The specimen received was a large mass with attached soft tissue and skin. Our approach to the specimen was to treat it as a cross between a skin ellipse and a lumpectomy, because we needed to adequately assess all of the large margins and with perpendicular sections. To do this the oriented mass was inked two different colors (medial and lateral halves), and a clock face numbering system was applied. With that system the superior, lateral, inferior, and medial margins were generally sampled with perpendicular sections at each clock number (1-12 o’clock). In addition the anterior and deep/posterior margins were also sampled with numerous perpendicular sections along the length of the specimen from superior to inferior. Heterogenous areas from the tumor and additional marginal tissue removed by the surgeon were also submitted.

Microscopic Findings:  
The presence of lipoblasts in the tumor corroborates the previous diagnosis of liposarcoma. Lipoblasts are cells with an abundant, clear, multi-vascularized cytoplasm, and an eccentric, darkly stained nucleus that is indented by the vacuoles. Examples are identified by the green arrows in figure 8. The next step for the pathologist is to determine what type of liposarcoma is present, which will effect the grade of the tumor. In figure 9 it is apparent that the cells change as you move farther into the interior of the tumor. On the left there is normal looking fat with lipoblasts and moving to the right the cells change to a spindle shape with growth patterns resembling those of fibrosarcomas and malignant fibrohistiocytomas. When this cell change is present the tumor is deemed “dedifferentiated”, which automatically gives the tumor a higher grade. For soft tissue tumors there are three grades based upon mitotic activity, necrosis, and differentiation, which are highly correlated with prognosis. In the final report this tumor was deemed to be a stage 3B, grade 3 dedifferentiated liposarcoma.

Figure 3: Grossing steps for lumpectomy specimens

Figure 4: Anterior view of specimen

Figure 5: Posterior view of specimen

Figure 6: Cut surface of specimen demonstrating variation in tumor appearance

Figure 7: Cut surface of specimen demonstrating variation in tumor appearance

Figure 8: Lipoblasts within the tumor (green arrows)

Figure 9: Cellular dedifferentiation within the tumor

References:  