MDM2 Gene Amplification by FISH

Indications for Ordering
Aid in the differential diagnosis between well-differentiated liposarcoma and benign lipoma
- Individuals diagnosed with or suspected of having well-differentiated liposarcoma based on tissue morphology

Test Description
- Fluorescence in situ hybridization (FISH) analysis on formalin-fixed, paraffin-embedded (FFPE) tissue
- DNA probes
  - MDM2 (12q15)
  - CEP12 (control probe)
- 20 cells evaluated from regions of tumor identified on histopathologic review of a matching hematoxylin and eosin stained section

Tests to Consider
Primary test
MDM2 Gene Amplification by FISH 3001301

Disease Overview
Incidence
- ~5,000 new liposarcoma cases/year in U.S.
  - ~20% of all soft-tissue sarcomas
Age of onset – ~50 years of age

Diagnostic issues
- Liposarcoma is a soft-tissue tumor that typically arises from deep-seated stroma in the limbs and retroperitoneum
- Tumor type named for location of tumor
  - Atypical lipomatous tumors (ALT) – extremities or body wall areas
    - Most common liposarcoma subtype
  - Well-differentiated liposarcomas (WDLPS) – located in retroperitoneum
    - Spectrum of well-differentiated liposarcomas is referred to as ALT/WDLPS
- Differentiating between benign lipomatous tumor and well-differentiated liposarcomas is difficult due to morphological similarities
- Diagnosis of well-differentiated liposarcomas is important due to the risk of recurrence and progression to dedifferentiated liposarcoma, a more aggressive tumor form
  - Benign lipoma is not characterized by MDM2 amplification

Genetics
Gene – MDM2
- Well-differentiated liposarcoma – typically associated with giant chromosomes that contain amplicons of the 12q13-15 chromosomal region

Test Interpretation
Results
- Amplified – MDM2/CEP12 ratio >2.0
  - Strongly supports a diagnosis of well-differentiated liposarcoma
- Nonamplified – MDM2/CEP12 ratio ≤2.0

Limitations
- Results may be compromised if the recommended fixation procedures have not been followed
- Test cannot be used to assess dedifferentiation of liposarcomas