TP53 somatic mutation testing – hematologic malignancies

The UNC Molecular Genetics Laboratory performs a targeted *TP53* sequencing assay using next-generation sequencing to provide prognostic information in chronic lymphocytic leukemia (CLL) and other hematologic neoplasms, such as mantle cell lymphoma (MCL).

Rationale for testing:
Testing for the presence of somatic gene mutations may assist in refining prognosis and therapy selection for hematologic malignancies.

1) **CLL:** Mutations in *TP53* are correlated with decreased survival and impact therapy selection.
2) **MCL:** Mutations in *TP53* are correlated with outcomes and impact therapy selection.

Specimen Requirements for the Myeloid Mutation Panel:
Bone marrow aspirate (1 mL, EDTA), peripheral blood (3mL, EDTA), or formalin-fixed, paraffin-embedded bone marrow clot sections (10 unstained slides, minimum area of sampled marrow = $4mm^2$) having at least 20% neoplastic cells. The assay is sensitive to variants above 5% allele frequency (10% clonal cells). This test is NOT appropriate for MRD monitoring. For patients undergoing repeat testing, previously detected variants will be reported to 3% VAF in fresh samples (5% in FFPE samples).

Gene Regions Tested – All exons of *TP53* are sequenced and analyzed

Limitations:
Gene amplifications, copy number changes, loss of heterozygosity, translocations, and insertions or deletions over 90 bases in length are not reliably detected by this assay. Normal tissue is not tested to determine whether a gene variant is somatic (acquired) or germline (heritable). If the patient has evidence of a heritable cancer syndrome (e.g. different tumor types, early age of onset, family history), genetic counseling is recommended. To make a patient appointment, call the Cancer Genetics Clinic at (919) 843-8724.

References:

1. National Comprehensive Cancer Network (NCCN) Clinical Practice Guidelines in Oncology: Chronic lymphocytic leukemia/small lymphocytic lymphoma, www.nccn.org
2. Zenz, T, et al. (2010). TP53 mutation and survival in chronic lymphocytic leukemia. Journal of Clinical Oncology : Official Journal of the American Society of Clinical Oncology, 28(29), 4473–4479. PMID: 20697090
3. Eskelund, et al. (2017). TP53 mutations identify younger mantle cell lymphoma patients who do not benefit from intensive chemoimmunotherapy. Blood, 130(17), 1903–1910. PMID: 28819011

Questions?

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