FISH
also known as: Fluorescence in situ hybridization (FISH), Hem/Onc FISH, solid tumor FISH

TEST DESCRIPTION:
Fluorescence in situ hybridization (FISH) in oncology is used to detect amplifications, deletions, duplications, rearrangements, and/or translocations of chromosome material known to be associated with specific types of cancer.

TEST DETAILS
• FISH testing is offered for both Hematology/Oncology/Lymphoma and Solid Tumor indications.
• FISH testing can be ordered by probe or panel.
• Please call to inquire about testing not listed below, as our probe inventory and availability is constantly expanding.

ADVANTAGES:
• Targeted approach based on differential diagnosis
• Detection includes numerical and structural chromosomal aberrations of interest with diagnostic and prognostic significance
• Monitors response to therapy
• Useful for opposite sex transplant
• Allows for rapid assessment
• Testing available on fresh or fixed tissue

LIMITATIONS:
• Targeted assay that provides information about the region(s) of interest only
• Detection dependent on the location and size of the aberration relative to the probe
• Limited resolution as compared to newer technologies such as microarray

INDICATIONS FOR HEMATOLOGY / ONCOLOGY / LYMPHOMA TESTING and AVAILABLE PANELS:
Probes applied to the panels below are contained in an alternate document located in our online Oncology FISH test catalog page.

• Acute Lymphocytic Leukemia/Lymphoma (ALL)
  o Adult B-cell ALL Panel
  o Pediatric B-cell ALL Panel
  o T-cell ALL Panel
• Acute Myeloid Leukemia (AML)
• Chronic Lymphocytic Leukemia (CLL)
• Chronic Myeloid Leukemia (CML)
• Eosinophilia
• Lymphoma
  o Marginal Zone
  o Non-Hodgkin Lymphoma (NHL)
• Multiple Myeloma (MM)
• Myelodysplastic Syndrome (MDS)
• Myeloproliferative Disorder (MPD)
INDICATIONS FOR SOLID TUMOR TESTING and AVAILABLE PANELS:

Probes applied to the panels below are contained in an alternate document located in our online Oncology FISH test catalog page.

- Alveolar Rhabdomyosarcome (ARMS)
- Alveolar Soft Part Sarcoma (ASPS)
- Aneurysmal Bone Cyst (ABC)
- Angiomatoid Fibrous Histocytoma (AFH)
- Bladder Cancer (UroVysion®)
- Clear Cell Sarcoma of Soft Tissue (CCS) / Malignant Melanoma of Soft Parts
- Dermatofibrosarcoma Protuberans (DFSP)
- Desmoplastic Small Round Cell Tumor (DSRCT)
- Ewing Sarcoma (ES) / Primitive Neuroectodermal Tumor (PNET)
- Extraskeletal Myxoid Chondrosarcoma (EMC)
- Infantile Fibrosarcoma (IFS)
- Inflammatory Myofibroblastic Tumor (IMT)
- Lipoblastoma
- Lipoma
- Liposarcoma (WDLS/ALT; DDLS)
- Low Grade Fibromyxoid Sarcoma (LGFMS)
- Mammary Analogue Secretory Carcinoma (MASC)
- Medulloblastoma (MBD)
- Midline Carcinoma
- Myxoid Liposarcoma (MLS)
- Neuroblastoma (NB)
- Neurological Cancer
- Nodular Faciitis
- Non-Small Cell Lung Cancer (NSCLC)
- Renal Cell Carcinoma (RCC)
- Rhabdoid Tumor (AT/RT; MRT)
- Synovial Sarcoma (SS)

SPECIMEN COLLECTION & TRANSPORT:

Complimentary test kits are available upon request, but are not required.

SAMPLE TYPES and REQUIREMENTS:

FRESH
- **blood [cancer]**: 3-5 ml whole blood in a sodium heparin tube (green top)
- **bone marrow**: 1.5-3 ml in a sodium heparin tube (green top)
  - Collect marrow from 1st or 2nd aspirate using a sodium-heparinized syringe
- **bone marrow core**: collect, store, and transport in tissue culture media – room temperature
- **lymphatic tissue/node**: ≥5 mm³ collect, store, and transport in tissue culture media – room temperature
- **solid tumor tissue**: ≥5 mm³ representative tumor tissue / collect, store, and transport in tissue culture media – room temperature
- **urine / bladder washings**: 30 ml in a sterile container; include a copy of the pathology report (when applicable)

FIXED (any specimen type)
- **tissue, paraffin embedded**:
  - For each chromosomal target send 2 positively charged (+) unstained slides (4-5 microns thick) of formalin-fixed, paraffin embedded tissue
    - Recommended: 2 slides per probe / Minimum: 1 slide per probe
  - Send an H&E slide with the invasive tumor area marked
    - Please do not mark on the unstained slides
  - Include a copy of the pathology report (when applicable)
SHIPPING:
- Maintain and ship samples at room temperature.
- Coordinate transport for sample to be received in our laboratory within 24-48 hours of collection.
  - **LOCAL:** Call 402-559-5070 (option 1)
  - **OUT OF AREA:** Prior to shipment, please fax the completed test request form to 402-559-7248, including the FedEx® airbill tracking number.
    - Saturday delivery MUST be checked when sending FedEx® on Friday.
    - Please include Internal Billing Reference # 3155070600 on the FedEx® airbill.
  - **Ship To:** Human Genetics Laboratory – Zip 5440
    UNMC Shipping & Receiving Dock
    601 S. Saddle Creek Road
    Omaha, NE 68106

FORMS FOR TESTING: The following forms can be downloaded via our website.
- **Required:** Oncology Test Request Form
- **Optional:** Informed Consent for Genetic Testing

TURNAROUND TIMES:
Fresh Samples:
- Cytogenetics and FISH: Results are typically available in 2-6 days when performed on blood and bone marrow; 2-7 days on bone marrow core. Results are typically available in 5-10 days when performed on lymphatic tissue/node and 10-20 days when performed on solid tumor tissue. Results are typically available in 3-7 days when performed on urine/bladder washings.
- Microarray: Results are typically available in 7-10 days when performed on blood, bone marrow, lymphatic tissue/node, and solid tumor tissue; 3-7 days on urine/bladder washings.

Fixed Samples (any specimen type): FISH results are typically available in 3-7 days and Microarray results in 15-21 days when performed on paraffin embedded tissue.

The above indicated turn around time reflects time to final report sign out for all studies requested, including Chromosome Analysis. However, upon request preliminary (verbal) FISH results may be available prior to completion of other studies.

BILLING: Our laboratory offers patient/self-pay, insurance (including Medicare/Medicaid), and client/institution billing options. Verifying coverage requirements or obtaining preauthorization PRIOR TO OR AT THE TIME OF SPECIMEN COLLECTION is often necessary. We provide preauthorization services upon request by calling 402-559-5070 (option 3); the following form is helpful for obtaining the information required by insurance providers and can be downloaded via our website.
- Request for Pre-Authorization

In some circumstances, a test may be warranted even though insurance coverage is denied or not guaranteed. For these situations, we request the following form be signed by the patient and submitted with the sample. This helps inform patients of their potential financial responsibility, should the costs of genetic testing not be paid by their insurance provider.
- **Advanced Beneficiary Notice of Noncoverage (ABN)** – required when billing Medicare

CPT CODES: Because of the complexity of probe application for FISH testing, please contact our laboratory for panel/probe-specific codes.

PRICING: For current costs contact the laboratory billing staff at 402-559-5070 (option 3).

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