Overview

Useful For
An aid in the diagnosis of alveolar soft-part sarcoma or renal cell carcinoma variant when used in conjunction with an anatomic pathology consultation

Reflex Tests

<table>
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<th>Test ID</th>
<th>Reporting Name</th>
<th>Available Separately</th>
<th>Always Performed</th>
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</table>

Testing Algorithm

This test does not include a pathology consultation. If a pathology consultation is requested, PATHC / Pathology Consultation should be ordered and the appropriate FISH test will be ordered and performed at an additional charge.

This test includes a charge for application of the first probe set (2 FISH probes) and professional interpretation of results.

Additional charges will be incurred for all reflex probes performed. Analysis charges will be incurred based on the number of cells analyzed per probe set. If no cells are available for analysis, no analysis charges will be incurred.

When a TFE3 rearrangement is identified, reflex testing using the TFE3/ASPSCR1 probe will be performed.

Method Name
Fluorescence In Situ Hybridization (FISH)

NY State Available
Yes

Specimen

Specimen Type
Tissue

Necessary Information

A reason for referral and pathology report are required in order for testing to be performed. Send information with specimen. Acceptable pathology reports include working drafts, preliminary pathology or surgical pathology reports.
Specimen Required
Submit only 1 of the following specimens:

Specimen Type: Tissue
Preferred: Tissue block

Collection Instructions: Submit a formalin-fixed, paraffin-embedded (FFPE) tumor tissue block. Blocks prepared with alternative fixation methods may be acceptable; provide fixation method used.

Acceptable: Slides

Collection Instructions: Four consecutive, unstained, 5 micron-thick sections placed on positively charged slides, and 1 hematoxylin and eosin-stained slide.

Forms
If not ordering electronically, complete, print, and send an Oncology Test Request (T729) with the specimen.

Specimen Minimum Volume
Two consecutive, unstained, 5 micron-thick sections placed on positively charged slides and 1 hematoxylin and eosin-stained slide

Reject Due To
All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Stability Information

<table>
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<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
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<tbody>
<tr>
<td>Tissue</td>
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<td></td>
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<tr>
<td></td>
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Clinical and Interpretive

Clinical Information
Alveolar soft-part sarcoma (ASPS) is a rare malignant tumor typically occurring in patients in their 20s to 30s within the muscle and deep tissues of the extremities. ASPS is slow growing and refractory to chemotherapy with a propensity to metastasize. Prolonged survival is possible even with metastasis, although the long-term disease-related mortality rate is high. ASPS is characterized by a translocation that results in fusion of TFE3 on chromosome Xp11.2 with ASPSCR1 (also called ASPL or RCC17) on chromosome 17q25.3. Both balanced and unbalanced forms (loss of the derivative X chromosome) of the translocation have been observed.

Another tumor, a rare subset of papillary renal cell carcinoma (RCC) with a distinctive pathologic morphology, has rearrangements of TFE3 with ASPSCR1 or other fusion partner genes. This tumor predominantly affects children and young adults, presents at an advanced stage but with an indolent clinical course, and is a distinct entity in the World Health Organization classification. Typically a balanced form of the translocation is present in the RCC variant.
An assay to detect rearrangement of TFE3 is useful to resolve diagnostic uncertainty in these tumor types, as immunohistochemistry for TFE3 is not reliable.

**Reference Values**
An interpretive report will be provided.

**Interpretation**
A neoplastic clone is detected when the percent of nuclei with the abnormality exceeds the established normal cutoff for the TFE3 probe set.

A positive result of TFE3 rearrangement is consistent with a diagnosis of alveolar soft-part sarcoma (ASPS) or renal cell carcinoma (RCC) variant.

A negative result suggests that TFE3 is not rearranged, but does not exclude the diagnosis of ASPS or RCC variant.

**Cautions**
This test is not approved by the U.S. Food and Drug Administration and it is best used as an adjunct to existing clinical and pathologic information.

Fixatives other than formalin (eg, Prefer, Bouin's) may not be successful for FISH assays, however non-formalin fixed samples will not be rejected.

Paraffin-embedded tissues that have been decalcified are generally unsuccessful for FISH analysis. The pathologist reviewing the hematoxylin and eosin-stained slide may find it necessary to cancel testing.

**Supportive Data**
FISH analysis was performed on 71 formalin fixed, paraffin-embedded specimens. These included 12 tumor samples (10 alveolar soft-part sarcoma [ASPS] and 2 renal cell carcinoma [RCC variant]), 9 tumors in the differential diagnosis, and 25 noncancerous control specimens from each gender (50 total). The normal controls were used to generate a normal cutoff for this assay. Of the 10 ASPS cases, 4 did not have a rearrangement, 2 had a balanced TFE3 separation, and 4 had an atypical TFE3 separation (presence of 2 normal X chromosomes and the derivative 17, but loss of the derivative X). This atypical rearrangement was confirmed using a TFE3/ASPSCR1 probe set. Of the 2 diagnostic RCC cases, 1 was normal and 1 had an atypical TFE3 separation, but reflex testing with the TFE3/ASPSCR1 probe was not possible due to insufficient sample.

**Clinical Reference**


**Performance**

**Method Description**
The test is performed using a laboratory-developed TFE3 tri-color break-apart strategy probe (BAP). Reflex testing using a TFE3/ASPSCR1 dual-color, dual-fusion (D-FISH) strategy probe set is performed when atypical TFE3 separation is detected. Formalin fixed paraffin-embedded tissues are cut at 5 microns and mounted on positively
charged glass slides. The selection of tissue and the identification of target areas on the hematoxylin and eosin (H and E)-stained slide are performed by a pathologist. Using the H and E-stained slide as a reference, target areas are etched with a diamond-tipped etcher on the back of the unstained slide to be assayed. Each probe set is hybridized to the appropriate target area and 2 technologists each analyze 50 interphase nuclei (100 total for each probe set) with the results expressed as the percent of abnormal nuclei. (Unpublished Mayo method)

**PDF Report**

No

**Day(s) and Time(s) Test Performed**

Samples processed Monday through Sunday. Results reported Monday through Friday, 8 a.m.-5 p.m. CST.

**Analytic Time**

7 days

**Maximum Laboratory Time**

10 days

**Specimen Retention Time**

Slides and H&E used for analysis are retained by the lab indefinitely. Client provided paraffin blocks and extra unstained slides (if provided) will be returned after testing is complete.

**Performing Laboratory Location**

Rochester

**Fees and Codes**

**Fees**

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact Customer Service.

**Test Classification**

This test was developed using an analyte specific reagent. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

**CPT Code Information**

88271x2, 88291 Ä¢â–¬â€œ DNA probe, each (first probe set), Interpretation and report

88271x2 Ä¢â–¬â€œ DNA probe, each; each additional probe set (if appropriate)

88271x1 Ä¢â–¬â€œ DNA probe, each; coverage for sets containing 3 probes (if appropriate)

88271x2 Ä¢â–¬â€œ DNA probe, each; coverage for sets containing 4 probes (if appropriate)

88271x3 Ä¢â–¬â€œ DNA probe, each; coverage for sets containing 5 probes (if appropriate)

88274 w/modifier 52 Ä¢â–¬â€œ Interphase in situ hybridization, <25 cells, each probe set (if appropriate)

88274 Ä¢â–¬â€œ Interphase in situ hybridization, 25 to 99 cells, each probe set (if appropriate)
88275 Ącą́-ąčœ Interphase in situ hybridization, 100 to 300 cells, each probe set (if appropriate)

**LOINC® Information**

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