

UCLA DIAGNOSTIC MOLECULAR PATHOLOGY LABORATORY
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BCL-2 Gene Rearrangement

↑CPT

83891; 84311; 83898 (x4); 83894 (x4); 83912

↑Synonyms

Gene Rearrangement *bcl-2*; Major Breakpoint Region (MBR); minor cluster region (mcr); t(14:18) Translocation

↑Applies to

Follicular B-Cell Lymphomas

↑Test Includes

Detection of *bcl-2* oncogene translocation between chromosomes 14 and 18 in some follicular B-cell lymphomas

↑Laboratory

Molecular Pathology

↑Availability

Monday-Friday, 0700-1700

↑Turnaround Time

3-14 days

↑Specimen

Whole blood, bone marrow, fresh or paraffin tissue, specifically from the involved area

↑ Volume

10 mL blood; 2 mL bone marrow; 0.2 g or more of tissue

↑ Container

Blood and bone marrow should be collected in a lavender top (EDTA) tube. Fresh tissue must be shipped on dry ice within 48 hours or in saline and brought to the Laboratory immediately.

↑ Collection

Tissue must be carefully cut from the surgically removed tumor and contain a representative sampling of at least 5% to 10% of tumor cells from the involved area.

↑ Storage Instructions

Blood and bone marrow should be refrigerated, never frozen. Frozen tissue can be stored in a -20°C or -70°C freezer until shipped. Paraffin tissue can be stored at room temperature.

↑ Causes for Rejection

Frozen tissue samples thawed during transit cannot be used for DNA analysis; specimens inadequately identified

↑ Reference Range

No rearrangement observed

↑ Use

To detect *bcl-2* rearrangement translocation in B-cell lymphomas. The *bcl-2* rearrangement is found in some follicular lymphomas, large diffuse B-cell lymphomas, and undifferentiated lymphomas. Usually this rearrangement involves a reciprocal translocation with the J_H region on chromosome 14, t(14;18).

↑ Limitations

Rearrangement will not be detected if the submitted tissue is not from the involved tumor.

↑ Methodology

Polymerase Chain Reaction (PCR). DNA is amplified using specific primer master mixes for MCR and mcr translocations and amplicons are detected using gel electrophoresis.

↑ Additional Information

The protein coded by the oncogene, *bcl-2*, acts by suppressing programmed cell death or apoptosis. Its role involves control of cell growth. Apoptosis occurs in all cells but is especially important in immune and hematopoietic cells, which have a high cell turnover rate. When the *bcl-2* gene is overexpressed, it will act to prevent apoptosis and possibly may render cells resistant to cell death by irradiation and certain chemotherapeutic agents. A translocation between immunoglobulin genes (heavy chain or light chain genes) and *bcl-2* results in the overexpression of *bcl-2* protein and thus the expansion of B cells due to inhibition of cell death. This type of translocation is found in 100% at small cleaved type, 76% to 85% at mixed cell and 59% to 75% at large cell types of B-cell lymphoma. It is found in some cases of chronic lymphocytic leukemia, acute lymphoblastic leukemia, and small noncleaved cell lymphoma as well as some cases of Hodgkin's lymphoma and myeloid neoplasms. The t(14;18) is rarely detected in monocytoid B-cell lymphoma and MALT lymphomas. *bcl-2* rearrangement is not pathognomonic for lymphomas. It is found in 10% of reactive lymph nodes, and in some normal cells (eg, lymphoid and myeloid precursors, medullary thymocytes, T cells, nongerminal center B cells, and plasma cells). It is not expressed in reactive germinal centers.
