Differential diagnosis between reactive and malignant lymphoproliferations and malignant lymphomas can be problematic. In such cases immunoglobulin (Ig) and/or T-cell receptor (TCR) clonality assessment can be a useful additional diagnostic tool.

Ig/TCR gene rearrangements occur sequentially in the earliest stages of lymphoid differentiation and thus are present in almost all immature and mature lymphoid cells. Since malignant lesions are derived from a single transformed lymphoid cell, monoclonality is therefore a key feature and virtually all progeny will contain one or several clonal Ig and/or TCR gene rearrangements.

**Clinical Background and Genetics**

- Lymphomas are a group of diseases caused by malignant lymphocytes that accumulate in lymph nodes and cause the clinical features of lymphadenopathy.
- The classification of lymphomas is either Hodgkin’s lymphoma and non-Hodgkin’s lymphoma where subdivision is based on the presence of Reed-Sternberg cells in the disease tissue of Hodgkin’s lymphoma.
- Routine diagnosis is performed using histomorphology, immunochemistry and flow cytometry. However, differential diagnosis between reactive lymphoproliferations and malignant lymphomas can be problematic.
- In such cases immunoglobulin (Ig) and/or T-cell receptor (TCR) clonality assessment can be a useful additional diagnostic tool.
- Ig/TCR gene rearrangements occur sequentially in the earliest stages of lymphoid differentiation and thus are present in almost all immature and mature lymphoid cells.

**Service offered**

- BGL is part of the Bristol Haemato-oncology Diagnostic Service (BHODs) and has access to a full range of complementary pathology services.
- The BIOMED-2 IdentiClone™ multiplex PCR systems provide a standardised strategy for clonality assessment in patients with suspect lymphoproliferations.
- PCR primers and protocols allow the discrimination between polyclonal, reactive processes and monoclonal, malignant tumours.
- Multiplex primer systems are used to screen for clonal rearrangements at immunoglobulin loci including immunoglobulin heavy chain (IgH), immunoglobulin light chain (IgK) and immunoglobulin lambda chain (IgL) and T-cell receptor loci including TCR beta (TCR B), TCR gamma (TCR G) and TCR delta (TCR D).
- Differential fluorescence detection is used to resolve ampiclons using on a capillary electrophoresis (Beckman Coulter CEQ8000 and the ABI 3730).
- A strategy employing initial and extended B- and T-cell multiplex PCR panels is employed for lymphoma screening where respective detection rates for B-cell proliferations are 91% and 100% and those for T-cell proliferations are 94% and 100%.
- Results are interpreted in the context of clinical, histological and immunophenotypic data.

**Referrals**

- **Diagnostic and Follow-up Testing**
  Ig and TCR clonality assessment is principally offered for patients with lymphoma and can also be used to discriminate between reactive and malignant lymphoproliferations.

**Quality**

- BGL participates in the UK NEQAS EQA programme for Ig/TCR clonality.

**Target reporting Time**

<table>
<thead>
<tr>
<th>Type of Clonality Assessment</th>
<th>TAT</th>
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<tbody>
<tr>
<td>Initial B- or T-cell clonality assessment</td>
<td>14 days</td>
</tr>
<tr>
<td>Extended B- or T-cell clonality assessment</td>
<td>14 days</td>
</tr>
<tr>
<td>Combined extended clonality assessment</td>
<td>14 days</td>
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</tbody>
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For up-to-date prices please contact the laboratory.