**BCR/ABL1** Multiplex RT-PCR, Qualitative

**Background**
The t(9;22)(q32;q22) BCR/ABL1 translocation is found in all cases of chronic myeloid leukemia (CML) and approximately 25% of acute lymphoblastic leukemias (ALL). Variations in translocation breakpoints in BCR and ABL1 lead to the production of different BCR/ABL1 fusion transcript isoforms. In 95% of CML, BCR/ABL1 transcripts are either e13a2 or e14a2 fusions (p210 isoform). Approximately 70% of BCR/ABL1 positive ALL contain e1a2 transcripts (p190 isoform), while 25% of cases contain either e13a2 or e14a2 fusions. While the e1a2, e13a2, e14a2 isoforms account for the vast majority of BCR/ABL1 translocations, atypical transcripts are sometimes observed. Breakpoints in ABL1 intron 1 and BCR intron 6 (e6a2) or intron 19 (e19a2, p230 isoform) have been reported, as well as cases with a breakpoint in ABL1 intron 2 leading to e1a3, e13a3 and e14a3 transcripts. The ability to detect and distinguish between BCR/ABL1 isoforms, including atypical forms, is critical for appropriate diagnosis and selection of appropriate follow-up tests.

Cleveland Clinic Laboratories offers a multiplex RT-PCR assay that is capable of detecting and distinguishing between the following BCR/ABL1 transcripts: e1a2, e1a3, e6a2, e13a2, e13a3, e14a2, e14a3 and e19a2.

**Clinical Indications**
This assay is intended to detect BCR/ABL1 translocations in newly diagnosed or suspected cases of CML or ALL.

**Methodology**
RNA is extracted from peripheral blood or bone marrow, and cDNA is prepared by reverse transcription. Multiplex RT-PCR is performed, and products visualized by capillary electrophoresis fragment length analysis on the ABI 3730 Genetic Analyzer (Applied Biosystems, Carlsbad, CA).

**Limitations of the Assay**
This assay is intended for initial diagnosis. The sensitivity of the assay corresponds to a percent ratio value of approximately 1% (BCRABL1/ABL1). For sensitive minimal residual disease detection, please order p190 BCR/ABL1 RT-PCR, Quantitative or p210 BCR/ABL1 RT-PCR, Quantitative.

**References**
## Test Overview

<table>
<thead>
<tr>
<th>Test Name</th>
<th>BCR/ABL1 Multiplex RT-PCR, Qualitative</th>
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<tbody>
<tr>
<td>Ordering Mnemonic</td>
<td>BCRQL</td>
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<tr>
<td>Reference Range</td>
<td>BCR/ABL1 transcripts not detected</td>
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<tr>
<td>Specimen Requirements</td>
<td>10 mL Whole blood EDTA (Lavender). Place specimen on ice after draw. Specimen must be delivered to testing lab by 2 pm on Fridays.</td>
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<tr>
<td>Minimum Specimen Requirement</td>
<td>5 mL Whole blood EDTA (Lavender). Place specimen on ice after draw. Specimen must be delivered to testing lab by 2 pm on Fridays.</td>
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<td>Alternate Specimen Requirement</td>
<td>5 mL Bone marrow EDTA (Lavender). Place specimen on ice after draw. Specimen must be delivered to testing lab by 2 pm on Fridays.</td>
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<td>Billing Code</td>
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<td>CPT Codes</td>
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