ALBERTA PRECISION LABORATORIES
Leaders in Laboratory Medicine

Laboratory Bulletin

DATE:	2021 May 31
TO:	All Zones
FROM:	Genetics and Genomics
RE:	Implementation of the Illumina TruSight RNA Fusion Panel for Multiple Myeloma

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Key Message

- Alberta Precision Laboratories, Genetics and Genomics (G&G), as part of its provincial program is introducing a next-generation sequencing (NGS) RNA fusion panel for testing of multiple myeloma (plasma cell neoplasms).
- Effective June 7, 2021, all qualifying multiple myeloma samples for cytogenetic analysis will be tested in at the Cancer Cytogenetics South laboratory in Calgary using the Illumina TruSight RNA Fusion panel. This panel targets 507 cancer-associated genes, of which 11 genes associated with multiple myeloma will be assessed and reported. Dosage analysis of TP53 will concurrently be assessed by fluorescent in situ hybridization (FISH).

Background

- Multiple myeloma is a malignancy of bone marrow plasma cells and is characterized by recurrent chromosome rearrangements resulting in elevated gene expression of select oncogenes. Cytogenetic evaluation of multiple myeloma, currently performed by FISH testing for the three most common gene fusions [t(4;14)(FGFR3;IGH), t(11;14)(IGH;CCND1), t(14;16)(IGH;MAF)] and TP53 dosage analysis, is important at the time of diagnosis for prognosis and treatment decisions. Application of the TruSight RNA Fusion panel on multiple myeloma samples to simultaneously measure fusion gene expression in a single sample will significantly improve the diagnostic yield and aid turn-around-time.

How this will impact you

- Reports will include gene expression results of 11 genes (*CCND1, CCND2, CCND3, FGFR3, WHSC1, MAF, MAFA, MAFB, MYC, BCL2 and BCL2L1*) in table format along with an interpretation of the results. This list of genes is subject to change with increasing knowledge and consultation with our stakeholders. The turn-around times will remain at two weeks for diagnostic samples and three weeks for follow-up samples.

Action Required

- For multiple myeloma testing, **two** green-top (sodium heparin) tubes with 3 to 4 ml of bone marrow aspirate per tube must be submitted to the G&G South Cancer Cytogenetic Laboratory for concurrent NGS and TP53 FISH analysis using the requisition REQ9037AP found in the APL Test Directory. NGS testing alone will be performed in the absence of a second tube. For samples where the final diagnosis is not a plasma cell neoplasm, chromosome analysis can be performed as long as **two** tubes are received.

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Inquiries, Feedback and Concerns may be directed to

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Approved by

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