Discussion

Albeit the Survey is not formally evaluated, the committee generally utilizes 80% consensus approach and overall interpretation in determining the correct responses. In addition, the committee also considers that ≥ 20 percent of participating laboratories perform testing for any particular antigen to be included.

Case BALL-04 Positive for MRD at approximately 0.1%

This case contained abnormal B lymphoblasts diluted in peripheral blood at approximately 0.1%. Analysis of the cells by flow cytometry shows a small population of abnormal cells that were positive for CD9, CD10, CD19, CD34, CD38 (bright), and CD58; and negative for CD20 and CD45; with increased forward and side scatter properties.

Of the 81 participants who reported a result, 74 (91.4%) correctly reported this sample as positive, with the remaining 7 (8.6%) participants reporting negative. Of those reporting the sample as positive, 40 participants reported in the 0.01 - 0.09% range, and 35 participants reported in the 0.1% - 0.9% range.

The consensus immunophenotype on the sample sent for flow cytometry is as follows:

Antigen	Negative	Positive	Partially Expressed	Non Consensus
CD5	X			
CD9		X		
CD10		X		
CD13/33				X
CD19		X		
CD20	X			
CD22		X		
CD34		X		
CD38		X		
CD45				X
CD58		X		
CD123				X
Kappa Light Chain	X			
Lambda Light Chain	X			

Case BALL-05 List Mode Case: Positive for MRD (lack of CD38 expression) @ approximately 0.2% of mononuclear cells.
This case contained an abnormal population colored in blue. The diagnostic population of cells in Tube 1 was CD45 dim, CD10 positive, CD58 bright, CD20 negative, and CD38 negative. Tube 2 showed a diagnostic population that was CD34 positive, CD9 negative, and CD13/33 positive.

The day 29 sample showed a small population with the same phenotype and can be seen clearly in Tube as CD10 positive CD38 negative. Tube 2 showed that this CD10 positive population was also positive for CD34 and CD13/33, consistent with the original phenotype.

All participants (100.0%, 84/84) reported this case as positive, with no participants calling it negative. Of those calling it positive (98.8%), the majority reported 0.1 - 0.9%. Participants who reported results for this sample below 0.1% should review their analysis procedures and consult recent literature on gating strategy.

The consensus immunophenotype on the list mode files sent for flow cytometry analysis is as follows:

Antigen	Negative	Positive	Partially Expressed:	Non-Consensus
CD9	X			
CD10		X		
CD13/33		X		
CD19		X		
CD20	X			
CD34		X		
CD38	X			
CD45				X
CD58		X		

Case BALL-06 List Mode Case Negative for MRD

Diagnostic files were included in this case, showing a population of cells that were CD45 dim, CD10 and CD58 bright, CD20 negative, CD38 variable in Tube 1. Tube 2 showed a population that was CD34 and CD13/33 negative, with variable CD9. This case did not contain an abnormal population (negative). However a very small population of hematogones with a classic maturation pattern was present. Plasma cells were clearly visible (CD38 bright, CD10 negative, CD20 negative).

This case has been sent previously (2018-B-ALL-04), where a total of 78.7% of participants reported this case as negative, with 21.3% calling it positive. Of those calling it positive, the majority reported 0.1 - 0.9%. This repeat challenge showed some improvement, with a total of 85.7% of participants reported this case as negative, and 14.3% calling it positive. Of those calling it positive, the majority reported 0.1 - 0.9%.

The consensus immunophenotype on the list mode files sent for flow cytometry analysis is as follows:

Antigen	Negative	Positive	Partially Expressed:	Non-Consensus
CD9		X		
CD10		X		
CD13/33				X
CD19		X		
CD20				X
CD34				X
CD38		X		
CD45		X		
CD58		X		

Benjamin Hedley, PhD, SCYM(ASCP)
Claire E. Murphy, MD
Adam C. Seegmiller, MD, PhD
DIAGNOSTIC IMMUNOLOGY AND FLOW CYTOMETRY COMMITTEE