BCR-ABL1 and AML Translocation Identification Programme

Distribution - 202101 Participant ID

Date Issued - 22 April 2020 Closing Date - 29 May 2020

Trial Comments

FINAL REPORT: This trial was issued to 161 participants; of which 152 (94.4%) returned results. Of the non returns, two laboratories notified us of their intended non return and three laboratories submitted requests for an extension in results submission in light of the ongoing Covid-19 pandemic.

Sample Comments

Two lyophilised cell line preparations were distributed for analysis: samples BCR 164 and AML 165. Participants were requested to analyse sample BCR 164 for the presence of a BCR-ABL1 translocation. Participants were requested to analyse sample AML 165 (subject to their laboratory repertoire) for the presence of the t(8;21) RUNX1-RUNX1T1, t(15;17) PML-RARA and inv(16) CBFB-MYH11 translocations associated with AML. Sample BCR 164 was manufactured to contain the e1a2 BCR-ABL1 transcript and sample AML 165 was manufactured to contain a t(8;21) RUNX1-RUNX1T1 rearrangement.

Results and Performance

Your Results

Identification	Your Results	Consensus Result
Sample 164		
BCR-ABL1 t(9;22)		Rearrangement Detected
Sample 165		
CBFB-MYH11 Inv(16)		No Rearrangement Detected
RUNX1-RUNX1T1 t(8;21)		Rearrangement Detected
PML-RARA t(15;17)		No Rearrangement Detected

All Participant Results

	Rearrangement Detected (Returns)	No Rearrangement Detected (Returns)
Sample 164		
BCR-ABL1 t(9;22)	145	2
Sample 165		
CBFB-MYH11 Inv(16)	0	127
RUNX1-RUNX1T1 t(8;21)	126	3
PML-RARA t(15;17)	2	131

Your Performance

Performance Status for this Trial	Performance Status Classification Over 3 Trial Period	
	Satisfactory	Critical

N/A = Not Applicable

BCR-ABL1 and AML Translocation Identification Programme

PCR Type

	Returns			
	BCR-ABL1 t(9;22)	*CBFB-MYH11* Inv(16)	*RUNX1-RUNX1T1* t(8;21)	*PML-RARA* t(15;17)
Real-Time PCR	56	54	53	58
Multiplex PCR	48	26	28	26
Single PCR	26	21	23	22
Nested PCR	15	21	19	22
PCR for Next generation Sequencing	4	5	5	5

Protocol Type

	Returns			
	BCR-ABL1 t(9;22)	*CBFB-MYH11* Inv(16)	*RUNX1-RUNX1T1* t(8;21)	*PML-RARA* t(15;17)
Biomed 1	24	29	28	28
In-house Assay	51	21	24	22
Hemavision Kit	9	22	23	22
EAC Protocol	23	23	23	25
Biotype Diagnostic GmbH Mentype AMLplex	4	6	6	6
Modified EAC Protocol	8	6	5	7
Qiagen Ipsogen RUNX1-RUNX1T1 Kit	-	-	5	-
Liaison Iam AML1-ETO Kit	-	-	5	-
Tib Molbiol LightMix kit	2	3	3	3
Oncomine Myeloid Research Assay	2	3	3	3
Biomed 3	-	2	2	2
Leukemia Fusion Gene (Q30) QuanDx kit	1	2	2	2
Roche LightCycler BCR-ABL1 Quantification Kit	2	-	-	-
Qiagen Ipsogen BCR-ABL1 Mbcr RGQ RT-PCR Kit	2	-	-	-
Qiagen Ipsogen BCR-ABL1 Mbcr IS-MMR Kits CE	1	-	-	-
Qiagen Ipsogen BCR-ABL1 mbcr Kit CE	3	-	-	-
Qiagen Ipsogen PML-RARA bcr1 Kit CE	-	-	-	4
Invivoscribe PML RARA Kit	-	-	-	3
Qiagen Ipsogen BCR-ABL1 Mbcr Kit CE	2	-	-	-
Liferiver BCR-ABL Real Time RT-PCR Kit	1	-	-	-
Qiagen Ipsogen CBFB-MYH11 A Kit	-	6	-	-
Liaison Iam BCR-ABL Kit	11	-	-	-
Liaison Iam CBFB-MYH11 Kit	-	4	-	-
Liaison Iam Iam PML-RARA Kit	-	-	-	6
Cepheid GeneXpert Ultra BCR-ABL assay	2	-	-	-
3B BlackBio TRUPCR BCR-ABL1 Kit	1	-	-	-

BCR-ABL1 and AML Translocation Identification Programme

Analysis Type

	Returns			
	BCR-ABL1 t(9;22)	*CBFB-MYH11* Inv(16)	*RUNX1-RUNX1T1* t(8;21)	*PML-RARA* t(15;17)
Real-Time PCR Fluorescent Detection	52	60	59	63
Agarose Gel Electrophoresis	61	43	44	42
Capillary Electrophoresis	18	11	12	13
Isothermic Real -Time PCR	9	4	5	5
NGS (ThermoFisher Ion Torrent)	2	3	3	3
Digital PCR	1	2	2	2
NGS (Illumina)	2	2	2	2
Acrylamide Gel Electrophoresis (PAGE)	2	1	1	1
Microfluidics Chip	1	1	1	1

Journal Reference for Assay

	Returns
van Dongen JJ et al. Leukemia. 1999 Dec;13(12):1901-28	59
Gabert J et al. Leukemia. 2003 Dec;17(12):2318-57	49
Cross NC et al Leukemia. 1994 Jan;8(1):186-9	28
Beillard et al. Leukemia 2003 Dec; 17 (12): 2474-86	12
Burmeister et al., Leuk Res. 2008 Apr;32(4):579-85.	8
Evans et al., Leukemia 9: 1285-1286, 1995	6
Emig M et al. Leukemia. 1999 Nov;13(11):1825-32	4
Maurer et al., Lancet 337:1055-1058, 1991	3
Miyamato et al(1997) Leukemia and Lymphoma 25	3

BCR-ABL1 and AML Translocation Identification Programme

Final Comments

Sample BCR 164

In line with sample formulation, 145 out of 147 (98.6%) participants returning a result for this sample correctly reported BCR 164 as being positive for a *BCR-ABL1* translocation.

138 of the 145 participants that detected a transcript provided interpretable details of the transcript type detected in BCR 164. 133 (96.4%) participants detected a p190 *BCR-ABL1* transcript, one (0.7%) detected both the p210 and p190 minor *BCR-ABL1* transcripts, and four (2.9%) detected >2 *BCR-ABL1* transcript types.

Of the two participants who reported a false negative result, one utilised the Qiagen Ipsogen BCR-ABL1 Mbcr kit with Real-Time Fluorescent detection and one used a single PCR approach with the Biomed 1 protocol and agarose gel electrophoresis as the analysis method.

Sample AML 165

For the t(8;21) *RUNX1-RUNX1T1* translocation, 129 participants tested for the presence of this rearrangement in AML 165. 126 (97.7%) correctly reported sample AML 165 as being positive for the t(8;21) rearrangement. Of the three participants who reported a false negative result for t(8;21), one utilised a single PCR approach using the Biomed 1 protocol and agarose gel electrophoresis, one used the EAC protocol with Real-Time PCR Fluorescent Detection and one used the Tib Molbiol LightMix assay with Real-Time PCR Fluorescent Detection.

127 participants tested for the presence of the inv(16) *CBFB-MYH11* rearrangement. 127 out of 127 participants (100%) correctly identifying AML 165 as being negative for the inv (16) rearrangement.

In line with sample formulation, 131 out of 133 (98.5%) participants testing for the presence of the t(15;17) *PML-RARA* translocation reported AML 165 as being negative for the rearrangement. Of the two participants who reported a false positive result, one used a single PCR approach with the Biomed 1 protocol and agarose gel electrophoresis, and one utilised the Tib Molbiol LightMix assay with Real-Time PCR Fluorescent Detection.

BCR-ABL1 and AML Translocation Identification Programme

Further Remarks

We remind participants to please test each sample for all the relevant assays available in their laboratory repertoire. For example, if a t(8;21) *RUNX1-RUNX1T1* transcript is detected in the AML sample, please do continue to analyse the sample for t(15;17) *PML-RARA* and inv(16) *CBFB-MYH11* rearrangements wherever possible. We acknowledge this approach may not reflect your strategy for a clinical case*;* however, it is important all results are returned for trial scoring purposes.

If you have not already informed us of the relevant assays offered by your laboratory please do email this information to admin@uknegasli.co.uk to avoid a non return designation and an adverse impact on your laboratory performance status.

BCR-ABL1 and AML Translocation Identification Programme

Information with respect to compliance with standards BS EN ISO/IEC 17043:2010

4.8.2 a) The proficiency testing provider for this programme is:
UK NEQAS for Leucocyte Immunophenotyping
Pegasus House, 4th Floor Suite
463A Glossop Road
Sheffield, S10 2QD
United Kingdom
Tel: +44 (0) 114 267 3600, Fax: +44 (0) 114 267 3601
e-mail: nicola.rose@ukneqasli.co.uk

4.8.2 b) The coordinators of UK NEQAS LI programmes are Mr Liam Whitby (Director) and Mr Stuart Scott (Centre Manager).

4.8.2 c) Person(s) authorizing this report:
Mr Liam Whitby (Director) or Mr Stuart Scott (Centre Manager) of UK NEQAS LI.

4.8.2 d) Pre issue testing of samples for this programme is subcontracted, although the final decision about sample suitability lies with the EQA provider; no other activities in relation to this EQA exercise were subcontracted. Where subcontracting occurs it is placed with a competent subcontractor and the EQA provider is responsible for this work.

4.8.2 g) The UK NEQAS LI Confidentiality Policy can be found in the Quality Manual which is available by contacting the UK NEQAS LI office. Participant details, their results and their performance data remain confidential unless revealed to the relevant NQAAP when a UK participant is identified as having performance issues.

4.8.2 i) All EQA samples are prepared in accordance with strict Standard Operational Procedures by trained personnel proven to ensure homogeneity and stability. Where appropriate/possible EQA samples are tested prior to issue. Where the sample(s) issued is stabilised blood or platelets, pre and post stability testing will have proved sample suitability prior to issue.

4.8.2 l), n), o), r) & s) Please refer to the UK NEQAS LI website at www.ukneqasli.co.uk for detailed information on each programme including the scoring systems applied to assess performance (for BS EN ISO/IEC 17043:2010 accredited programmes only). Where a scoring system refers to the 'consensus result' this means the result reported by the majority of participants for that trial issue. Advice on the interpretation of statistical analyses and the criteria on which performance is measured is also given. Please note that where different methods/procedures are used by different groups of participants these may be displayed within your report, but the same scoring system is applied to all participants irrespective of method/procedure used.

4.8.2 m) We do not assign values against reference materials or calibrants.

4.8.2 q) Details of the programme designs as authorized by The Steering Committee and Specialist Advisory Group can be found on our website at www.ukneqasli.co.uk. The proposed trial issue schedule for each programme is also available.

4.8.2 t) If you would like to discuss the outcomes of this trial issue, please contact UK NEQAS LI using the contact details provided. Alternatively, if you are unhappy with your performance classification for this trial, please find the appeals procedure at www.ukneqasli.co.uk/contact-us/appeals-and-complaints/

4.8.4) The UK NEQAS LI Policy for the Use of Reports by Individuals and Organisations states that all EQA reports are subject to copyright, and, as such, permission must be sought from UK NEQAS LI for the use of any data and/or reports in any media prior to use. See associated policy on the UK NEQAS LI website: http://www.ukneqasli.co.uk/eqa-pt-programmes/new-participant-information/