

# CERTIFICATE

Survey of 25 October 2024

You have fulfilled the requirements of the External Quality Assessment with the following analysis

## Haematology 10 - Immunophenotyping 01 (213):

Validity 12 months:

T-Lymphocytes (as % of all lymphocytes)

B-Lymphocytes (as % of all lymphocytes)

NK-cells without CD3-expression (as % of all lymphocytes)

CD4 pos. Lymphocytes with CD3-expression (as % of all lymphocytes) (R: B2)

CD8 pos. Lymphocytes with CD3-expression (as % of all lymphocytes) (R: B2)

T-Lymphocytes

B-Lymphocytes

NK-cells without CD3-expression

CD4 pos. Lymphocytes with CD3-expression (/nl)

CD8 pos. Lymphocytes with CD3-expression (/nl)

(R) analysis is subject to the RiliBÄK

Customer:

10042267

Laboratory of Flow Cytometry

Department of Clinical Immunology

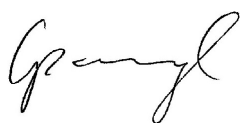
Institute of Rheumatology

Olga Krystufkova MD

Na Slupi 4

12850 Prague 2

Düsseldorf, 27 November 2024



Prof. Dr. med. Michael Spannagl  
(Head of Reference Institution)



Prof. Dr. med. Wolfgang Kern  
(Adviser)

# CERTIFICATE OF PARTICIPATION

Survey of 25 October 2024

You have participated in the External Quality Assessment with the following analysis

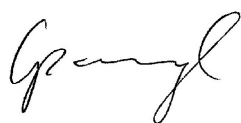
## Haematology 10 - Immunophenotyping 01 (213):

Lymphocytes (as % of all leucocytes)  
T-Lymphocytes (as % of all lymphocytes)  
B-Lymphocytes (as % of all lymphocytes)  
NK-cells without CD3-expression (as % of all lymphocytes)  
CD4 pos. Lymphocytes with CD3-expression (as % of all lymphocytes) (R: B2)  
CD8 pos. Lymphocytes with CD3-expression (as % of all lymphocytes) (R: B2)  
Leucocytes  
Lymphocytes  
T-Lymphocytes  
B-Lymphocytes  
NK-cells without CD3-expression  
CD4 pos. Lymphocytes with CD3-expression (/nl)  
CD8 pos. Lymphocytes with CD3-expression (/nl)

(R) analysis is subject to the RiliBÄK

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Prof. Dr. med. Wolfgang Kern  
(Adviser)



## Listing and evaluation of the results

10042267: Laboratory of Flow Cytometry  
Department of Clinical Immunology  
Institute of Rheumatology  
Olga Krystufkova MD

### Survey of 25 October 2024

Adviser:

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## Haematology 10 - Immunophenotyping 01

Analyte	Sam- ple	Unit	Your value	Target value	TV- Type	Lower limit	Upper limit	Deviation	Z-Score	Meets criteria	
Lymphocytes (as % of all leucocytes)	(1) 61	%	30.5	29.9	SV	22.4	37.4				
	(1) 62		33.5	34.5	SV	25.9	43.1				
T-Lymphocytes (as % of all lymphocytes)	61	%	66.0	66.8	SV	50.1	83.5	-1.1%	-0,329	+	
	62		74.0	72.0	SV	54.0	90.0	2.8%	1,2	+	
B-Lymphocytes (as % of all lymphocytes)	61	%	11.6	12.9	SV	9.03	16.8	-9.8%	-1,44	+	
	62		20.2	21.3	SV	14.9	27.7	-5.1%	-0,824	+	
NK-cells without CD3-expression (as % of all lymphocytes)	61	%	22.4	18.8	SV	13.2	24.4	18.9%	1,67	+	
	62		5.97	5.64	SV	3.95	7.33	5.9%	0,492	+	
CD4 pos. Lymphocytes with CD3-expression (as % of all lymphocytes)	61	%	46.3	47.0	SV	35.3	58.8	-1.4%	-0,337	+	
	62		52.3	50.9	SV	38.2	63.6	2.8%	0,723	+	
CD8 pos. Lymphocytes with CD3-expression (as % of all lymphocytes)	61	%	19.2	18.7	SV	14.0	23.4	2.5%	0,402	+	
	62		21.2	19.8	SV	14.9	24.8	7.2%	1,11	+	
Leucocytes	(1) 61	/nl	5.61								
	(1) 62		8.62								
Lymphocytes	(1) 61	/nl	1.71	1.77	SV	1.33	2.21				
	(1) 62		2.89	2.96	SV	2.22	3.70				
T-Lymphocytes	61	/nl	1.13	1.13	SV	0.847	1.41	0.0%	0	+	
	62		2.13	2.10	SV	1.58	2.63	1.4%	0,176	+	
B-Lymphocytes	61	/nl	0.199	0.217	SV	0.152	0.282	-8.3%	-0,692	+	
	62		0.583	0.622	SV	0.435	0.809	-6.3%	-0,629	+	
NK-cells without CD3-expression	61	/nl	0.380	0.322	SV	0.225	0.419	18.0%	1,21	+	
	62		0.170	0.169	SV	0.118	0.220	0.6%	0,03	+	
CD4 pos. Lymphocytes with CD3-expression (/nl)	61	/nl	0.790	0.795	SV	0.596	0.994	-0.6%	-0,072	+	
	62		1.51	1.48	SV	1.11	1.85	2.0%	0,229	+	
CD8 pos. Lymphocytes with CD3-expression (/nl)	61	/nl	0.330	0.315	SV	0.236	0.394	4.8%	0,536	+	
	62		0.610	0.578	SV	0.434	0.722	5.5%	0,552	+	

## Listing and evaluation of the results

10042267: Laboratory of Flow Cytometry  
 Department of Clinical Immunology  
 Institute of Rheumatology  
 Olga Krystufkova MD

### Survey of 25 October 2024

Analyte	Sample	Your unit	Stated value	Conversion factor	Method	Manufacturer	Device	Hematology system	Sample reception date	Sample processing date
Lymphocytes (as % of all leucocytes)	61		30.5	1.00	223			ZY		
	62		33.5	1.00						
T-Lymphocytes (as % of all lymphocytes)	61		66.0	1.00	223			ZY		
	62		74.0	1.00						
B-Lymphocytes (as % of all lymphocytes)	61		11.6	1.00	223			ZY		
	62		20.2	1.00						
NK-cells without CD3-expression (as % of all lymphocytes)	61		22.4	1.00	223			ZY		
	62		5.97	1.00						
CD4 pos. Lymphocytes with CD3-expression (as % of all lymphocytes)	61		46.3	1.00	223			ZY		
	62		52.3	1.00						
CD8 pos. Lymphocytes with CD3-expression (as % of all lymphocytes)	61		19.2	1.00	223			ZY		
	62		21.2	1.00						
Leucocytes	61	/nl	5.61	1.00	223			ZY		
	62		8.62	1.00						
Lymphocytes	61	/nl	1.71	1.00	223			ZY		
	62		2.89	1.00						
T-Lymphocytes	61	/nl	1.13	1.00	223			ZY		
	62		2.13	1.00						
B-Lymphocytes	61	/nl	0.199	1.00	223			ZY		
	62		0.583	1.00						
NK-cells without CD3-expression	61	/nl	0.380	1.00	223			ZY		
	62		0.170	1.00						
CD4 pos. Lymphocytes with CD3-expression (/nl)	61	/nl	0.790	1.00	223			ZY		
	62		1.51	1.00						
CD8 pos. Lymphocytes with CD3-expression (/nl)	61	/nl	0.330	1.00	223			ZY		
	62		0.610	1.00						

(1) In general, no certificate is issued for this parameter in this EQA scheme.

## Individual summary of results

10042267: Laboratory of Flow Cytometry  
 Department of Clinical Immunology  
 Institute of Rheumatology  
 Olga Krystufkova MD

Survey of 25 October 2024

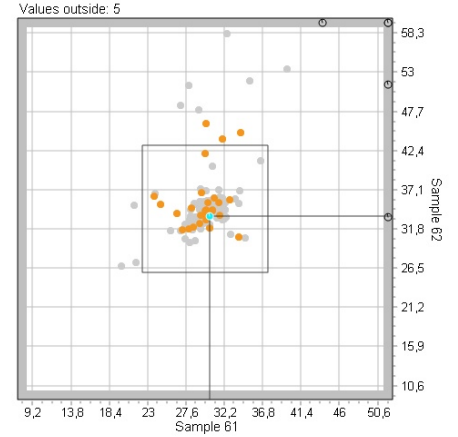
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### Haematology 10 - Immunophenotyping 01

Lymphocytes (as % of all leucocytes) (% , N = 165)										
Collective	Sam- ple	Target value	Target range	Participants collective			Rate (%)			
				AVG	CV	Num.	Sam.	total		
Abbott	(1) 61	36.5	27.4 - 45.6	36.5	35.1	4				
	62	38.8	29.1 - 48.5	38.8	24.4	4				
Bayer-Technicon	(1) 61	27.9	20.9 - 34.9	27.9	0.000	1				
	62	32.5	24.4 - 40.6	32.5	0.000	1				
Coulter	61	30.0	22.5 - 37.5	30.0	7.70	46				
	62	34.1	25.6 - 42.6	34.1	6.98	46				
Sysmex	61	30.4	22.8 - 38.0	30.4	4.14	85				
	62	34.6	26.0 - 43.3	34.6	3.41	85				
other systems	61	29.9	22.4 - 37.4	29.9	6.45	29				
	62	34.5	25.9 - 43.1	34.5	6.38	29				

(1) In individual cases is a statistically valid valuation with consensus value not given, because size of the collective < 8 values.

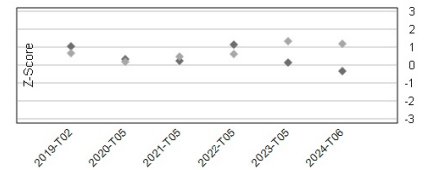
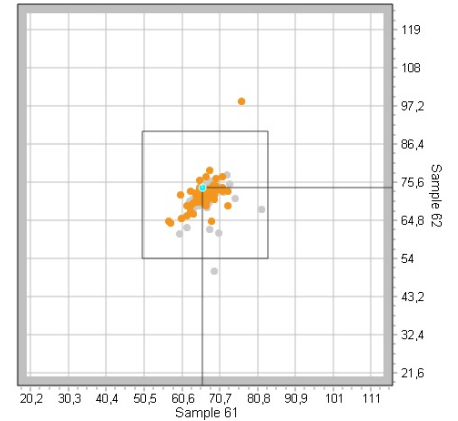
Rate of success: 89,7%



T-Lymphocytes (as % of all lymphocytes) (% , N = 195)										
Collective	Sam- ple	Target value	Target range	Participants collective			Rate (%)			
				AVG	CV	Num.	Sam.	total		
single-platform	61	67.1	50.3 - 83.9	67.1	3.32	76	100	98.7		
	62	71.9	53.9 - 89.9	71.9	2.74	76	98.7			
dual-platform	61	66.8	50.1 - 83.5	66.8	3.46	115	100	99.1		
	62	72.0	54.0 - 90.0	72.0	2.29	115	99.1			
other methods	(1) 61	68.9	51.7 - 86.1	68.9	2.06	4				
	62	72.2	54.2 - 90.3	72.2	2.05	4				

(1) In individual cases is a statistically valid valuation with consensus value not given, because size of the collective < 8 values.

Rate of success: 99%

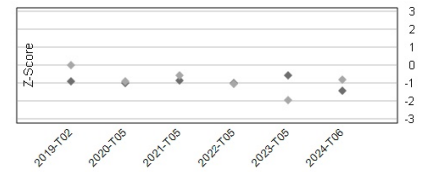
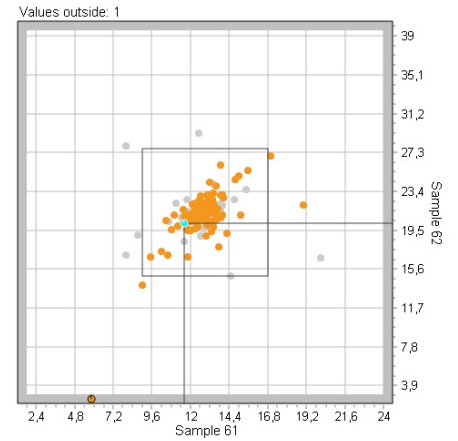


### B-Lymphocytes (as % of all lymphocytes) (% , N = 186)

Collective	Sam-ple	Target value	Target range	Participants collective			Rate (%)	
				AVG	CV	Num.	Sam.	total
single-platform	61	12.7	8.89 - 16.5	12.7	5.46	72	95.8	94.4
	62	21.2	14.8 - 27.6	21.2	5.00	72	97.2	
dual-platform	61	12.9	9.03 - 16.8	12.9	6.80	110	96.4	96.4
	62	21.3	14.9 - 27.7	21.3	6.15	110	98.2	
other methods (1)	61	12.3	8.61 - 16.0	12.3	23.3	4		
	62	19.9	13.9 - 25.9	19.9	22.3	4		

(1) In individual cases is a statistically valid valuation with consensus value not given, because size of the collective < 8 values.

Rate of success: 95,7%

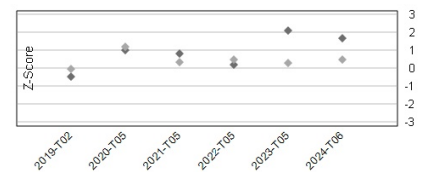
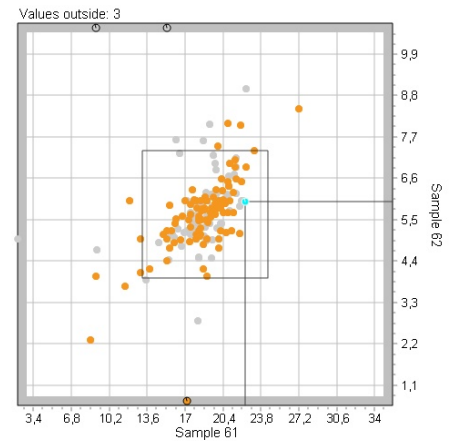


### NK-cells without CD3-expression (as % of all lymphocytes) (% , N = 184)

Collective	Sam-ple	Target value	Target range	Participants collective			Rate (%)	
				AVG	CV	Num.	Sam.	total
single-platform	61	18.8	13.2 - 24.4	18.8	11.0	72	95.8	87.5
	62	5.74	4.02 - 7.46	5.74	15.3	72	90.3	
dual-platform	61	18.8	13.2 - 24.4	18.8	11.3	108	93.5	88.9
	62	5.64	3.95 - 7.33	5.64	11.9	108	92.6	
other methods (1)	61	17.2	12.0 - 22.4	17.2	9.01	4		
	62	6.78	4.75 - 8.81	6.78	45.1	4		

(1) In individual cases is a statistically valid valuation with consensus value not given, because size of the collective < 8 values.

Rate of success: 88%

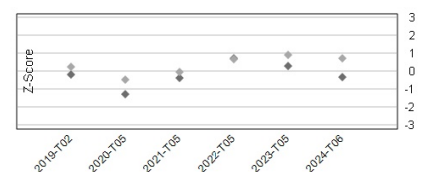
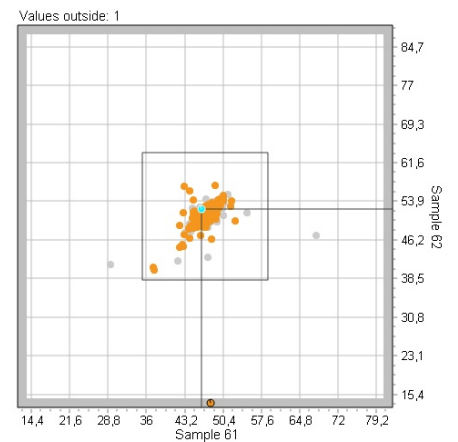


### CD4 pos. Lymphocytes with CD3-expression (as % of all lymphocytes) (% , N = 192)

Collective	Sam-ple	Target value	Target range	Participants collective			Rate (%)	
				AVG	CV	Num.	Sam.	total
single-platform	61	47.3	35.5 - 59.1	47.3	4.40	74	97.3	97.3
	62	51.0	38.3 - 63.8	51.0	3.67	74	100	
dual-platform	61	47.0	35.3 - 58.8	47.0	4.23	114	100	99.1
	62	50.9	38.2 - 63.6	50.9	3.83	114	99.1	
other methods (1)	61	48.4	36.3 - 60.5	48.4	3.57	4		
	62	51.1	38.3 - 63.9	51.1	3.87	4		

(1) In individual cases is a statistically valid valuation with consensus value not given, because size of the collective < 8 values.

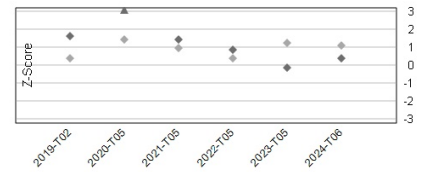
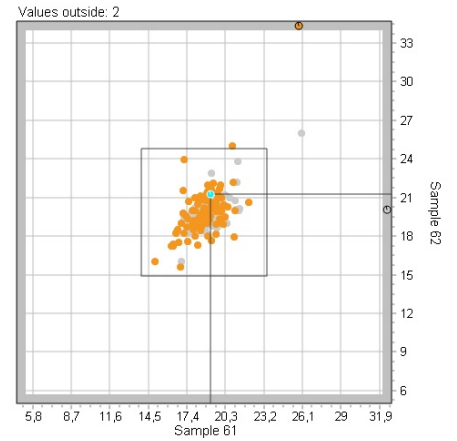
Rate of success: 98,4%



CD8 pos. Lymphocytes with CD3-expression (as % of all lymphocytes) (% , N = 192)										
Collective	Sample	Target value	Target range	Participants collective			Rate (%)			
				AVG	CV	Num.	Sam.	total		
single-platform	61	19.0	14.3 - 23.8	19.0	6.26	74	97.3	97.3		
	62	19.7	14.8 - 24.6	19.7	4.80	74	98.6			
dual-platform	61	18.7	14.0 - 23.4	18.7	6.26	114	99.1	98.2		
	62	19.8	14.9 - 24.8	19.8	6.52	114	98.2			
other methods (1)	61	19.2	14.4 - 24.0	19.2	4.90	4				
	62	19.7	14.8 - 24.6	19.7	6.04	4				

(1) In individual cases is a statistically valid valuation with consensus value not given, because size of the collective < 8 values.

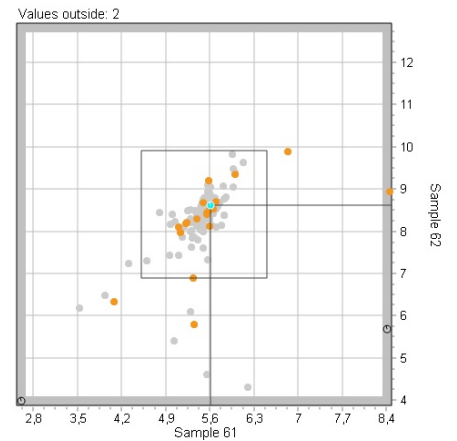
Rate of success: 97,9%



Leucocytes (/nl, N = 156)									
Collective	Sample	Target value	Target range	Participants collective			Rate (%)		
				AVG	CV	Num.	Sam.	total	
Abbott (1)	61			5.27		4			
	62			7.86		4			
Bayer-Technicon (1)	61			5.47		1			
	62			8.14		1			
Coulter	61			5.38		44			
	62			8.14		44			
Sysmex	61			5.57		86			
	62			8.49		86			
other Hematology system	61			5.51		21			
	62			8.40		21			

(1) In individual cases is a statistically valid valuation with consensus value not given, because size of the collective < 8 values.

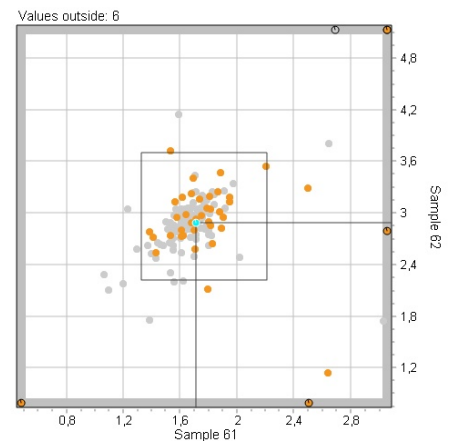
Rate of success: 91%



Lymphocytes (/nl, N = 177)									
Collective	Sample	Target value	Target range	Participants collective			Rate (%)		
				AVG	CV	Num.	Sam.	total	
Abbott (1)	61	1.99	1.49 - 2.49	1.99	32.8	3			
	62	3.15	2.36 - 3.94	3.15	20.7	3			
Bayer-Technicon (1)	61	1.56	1.17 - 1.95	1.56	0.000	1			
	62	2.85	2.14 - 3.56	2.85	0.000	1			
Coulter	61	1.60	1.20 - 2.00	1.60	8.44	45			
	62	2.74	2.06 - 3.43	2.74	8.39	45			
Sysmex	61	1.70	1.27 - 2.13	1.70	5.24	84			
	62	2.95	2.21 - 3.69	2.95	4.64	84			
other systems	61	1.77	1.33 - 2.21	1.77	13.4	44			
	62	2.96	2.22 - 3.70	2.96	11.5	44			

(1) In individual cases is a statistically valid valuation with consensus value not given, because size of the collective < 8 values.

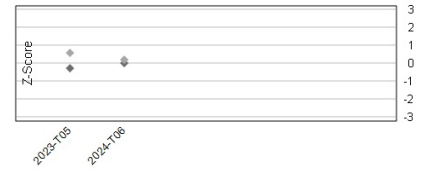
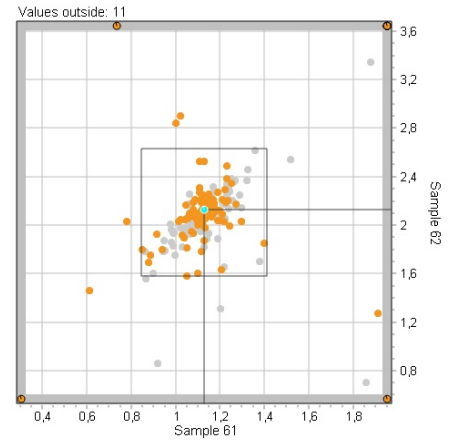
Rate of success: 90,4%



T-Lymphocytes (/nl, N = 184)										
Collective	Sam-ple	Target value	Target range	Participants collective			Rate (%)			
				AVG	CV	Num.	Sam.	total		
single-platform	61	1.14	0.855 - 1.42	1.14	12.8	74	93.2	89.2		
	62	2.07	1.55 - 2.59	2.07	12.4	74	90.5			
dual-platform	61	1.13	0.847 - 1.41	1.13	7.52	108	89.8	88.0		
	62	2.10	1.58 - 2.63	2.10	8.10	108	88.9			
other methods (1)	61	1.50	1.13 - 1.88	1.50	41.1	2				
	62	2.65	1.99 - 3.31	2.65	41.9	2				

(1) In individual cases is a statistically valid valuation with consensus value not given, because size of the collective < 8 values.

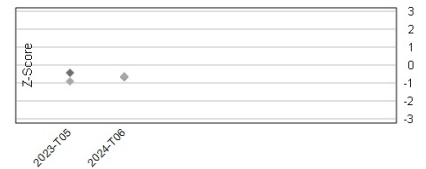
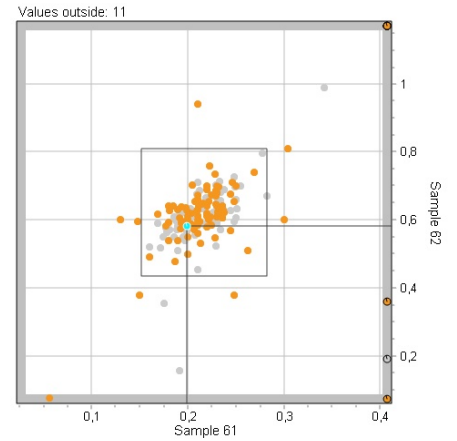
Rate of success: 87,5%



B-Lymphocytes (/nl, N = 175)										
Collective	Sam-ple	Target value	Target range	Participants collective			Rate (%)			
				AVG	CV	Num.	Sam.	total		
single-platform	61	0.217	0.152 - 0.282	0.217	13.8	70	94.3	91.4		
	62	0.613	0.429 - 0.797	0.613	11.4	70	91.4			
dual-platform	61	0.217	0.152 - 0.282	0.217	12.0	103	87.4	85.4		
	62	0.622	0.435 - 0.809	0.622	9.97	103	88.3			
other methods (1)	61	0.281	0.197 - 0.365	0.281	35.2	2				
	62	0.827	0.579 - 1.08	0.827	31.1	2				

(1) In individual cases is a statistically valid valuation with consensus value not given, because size of the collective < 8 values.

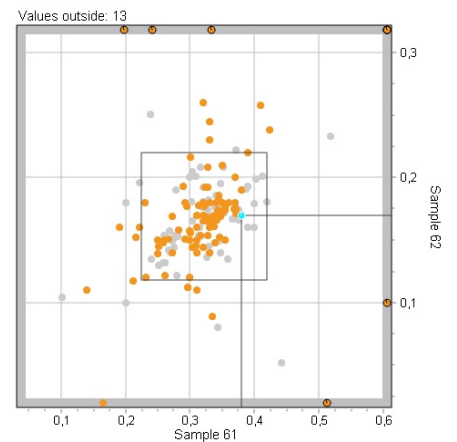
Rate of success: 88%



NK-cells without CD3-expression (/nl, N = 174)										
Collective	Sam-ple	Target value	Target range	Participants collective			Rate (%)			
				AVG	CV	Num.	Sam.	total		
single-platform	61	0.327	0.229 - 0.425	0.327	18.0	70	88.6	84.3		
	62	0.169	0.118 - 0.220	0.169	17.8	70	87.1			
dual-platform	61	0.322	0.225 - 0.419	0.322	14.9	102	85.3	75.5		
	62	0.169	0.118 - 0.220	0.169	19.5	102	78.4			
other methods (1)	61	0.400	0.280 - 0.520	0.400	47.8	2				
	62	0.193	0.135 - 0.251	0.193	33.2	2				

(1) In individual cases is a statistically valid valuation with consensus value not given, because size of the collective < 8 values.

Rate of success: 79,3%



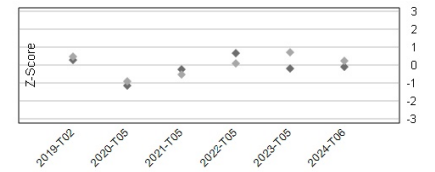
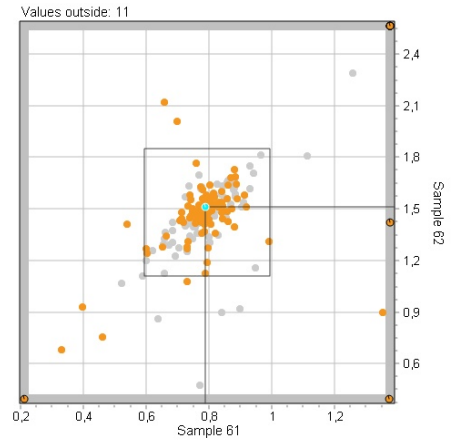


**CD4 pos. Lymphocytes with CD3-expression (/nl) (/nl, N = 188)**

Collective	Sam- ple	Target value	Target range	Participants collective			Rate (%)		
				AVG	CV	Num.	Sam.	total	
single-platform	61	0.798	0.599 - 0.998	0.798	13.0	75	93.3	88.0	
	62	1.47	1.10 - 1.84	1.47	13.5	75	89.3		
dual-platform	61	0.795	0.596 - 0.994	0.795	8.68	110	88.2	85.5	
	62	1.48	1.11 - 1.85	1.48	8.85	110	87.3		
other methods	(1)	61	0.879	0.659 - 1.10	0.879	44.4	3		
		62	1.61	1.21 - 2.01	1.61	43.1	3		

(1) In individual cases is a statistically valid valuation with consensus value not given, because size of the collective < 8 values.

Rate of success: 85,6%


**CD8 pos. Lymphocytes with CD3-expression (/nl) (/nl, N = 181)**

Collective	Sam- ple	Target value	Target range	Participants collective			Rate (%)		
				AVG	CV	Num.	Sam.	total	
single-platform	61	0.326	0.245 - 0.408	0.326	14.7	72	88.9	83.3	
	62	0.571	0.428 - 0.714	0.571	14.4	72	86.1		
dual-platform	61	0.315	0.236 - 0.394	0.315	8.89	107	86.0	84.1	
	62	0.578	0.434 - 0.722	0.578	10.0	107	88.8		
other methods	(1)	61	0.430	0.323 - 0.538	0.430	49.3	2		
		62	488	366 - 610	488	160	2		

(1) In individual cases is a statistically valid valuation with consensus value not given, because size of the collective < 8 values.

Rate of success: 82,9%

