

Verein für
Association pour le
Associazione per il



medizinische Qualitätskontrolle
contrôle de qualité médical
controllo di qualità medico

Report

Differential Blood Smear H3

MQ 2026-2

Acknowledgements

The Zybio Z3 analyzer was provided by the company Polymed, the ABX Microsemi CRP analyzer by the company Axonlab and the XP-300 analyzer by the Firma Sysmex. MQ employees conducted the measurements.

The findings of the XN-20 and of the microscopic blood counts were generated by the Central Laboratory of Medical Diagnostic HAD of the University Hospital Zurich Hematology Clinic. The lab is ISO/IEC 17025 certified (STS 445). Prof. Dr. med. Stefan Balabanov is the responsible manager; Prof. MG Manz, M.D., the clinic director. www.haematologie.usz.ch

For information regarding all analyses offered by the University Hospital of Zurich, see:
www.uzl.usz.ch

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1 Sample A

1.1 ABX Microsemi CRP



Findings MQ 2026-2 H3A

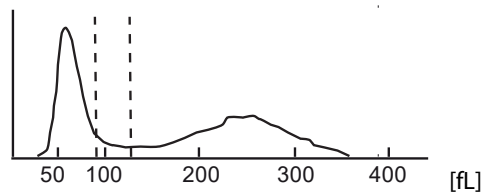
58 year old woman

WBC :	7.0	$10^3/\mu\text{L}$	MCV :	88.2	μm^3
RBC :	4.79	$10^6/\mu\text{L}$	MCH :	28.6	pg
HGB :	13.7	g/dL	MCHC:	32.4	g/dL
HCT :	42.3	%	RDW :	12.2	%
PLT :	246	$10^3/\mu\text{L}$	MPV :	6.7	μm^3
PCT :	0.165	%	PDW :	13.6	%

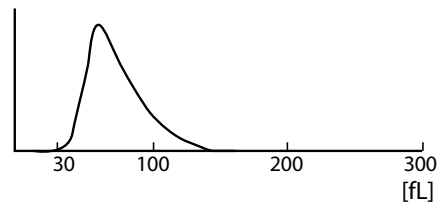
WBC Flags: G1

DIFF:					
%LYM:	41.0	%	#LYM:	2.9	$10^3/\mu\text{L}$
%MON:	4.5	%	#MON:	0.3	$10^3/\mu\text{L}$
%GRA:	54.5	%	#GRA:	3.8	$10^3/\mu\text{L}$

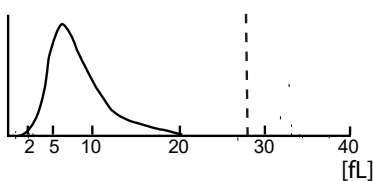
WBC



RBC



PLT



1.2 Sysmex XP300



Findings MQ 2026-2 H3A 58 year old woman

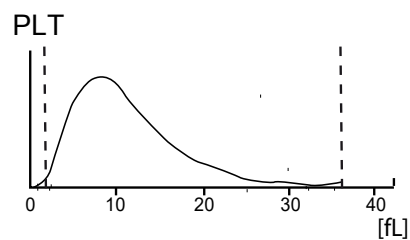
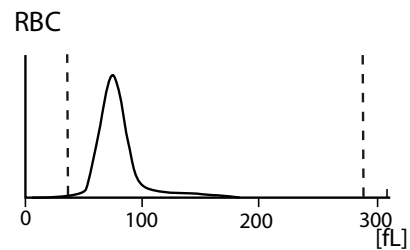
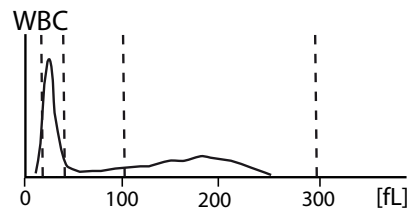
WBC	7.3	$10^3/\mu\text{L}$	WBC
RBC	4.74	$10^6/\mu\text{L}$	
HGB	13.3	g/dL	
HCT	40.1	%	
MCV	84.6	fL	
MCH	28.1	pg	
MCHC	33.2	g/dL	
PLT	270	$10^3/\mu\text{L}$	
LYM%	40.0	%	
MXD%	5.9	%	
NEUT%	54.1	%	
LYM#	2.9	$10^3/\mu\text{L}$	
MXD#	0.4	$10^3/\mu\text{L}$	
NEUT#	4.0	$10^3/\mu\text{L}$	
RDW_SD	43.5	fL	
RDW_CV	13.5	%	
PDW	10.1	fL	
MPV	8.6	fL	
P_LCR	15.1	%	
PCT	0.23	%	
			PLT

1.3 Zbio Z3 CRP



Findings MQ 2026-2 H3A 58 year old woman

WBC	7.31	$10^3/\mu\text{l}$	3.50-9.50
Lym#	2.92	$10^3/\mu\text{l}$	1.10-3.20
Mid#	0.54	$10^3/\mu\text{l}$	0.10-3.20
Gran#	3.85	$10^3/\mu\text{l}$	1.80-6.30
Lym%	39.9	%	20.0-50.0
Mid%	7.4	%	3.0-15.0
Gran%	52.7	%	40.0-75.0
RBC	4.99	$10^6/\mu\text{l}$	3.80-5.80
HGB	14.0	g/dl	11.5-17.5
HCT	41.1	%	35.0-50.0
MCV	82.4	fL	82.0-100.0
MCH	28.0	pg	27.0-34.0
MCHC	34.0	g/dl	31.6-35.4
RDW-CV	14.0	%	11.5-16.0
RDW-SD	38.7	fL	35.0-56.0
PLT	246	$10^3/\mu\text{l}$	125-350
MPV	10.2	fL	6.5-12.0
PDW	16.1	fL	9.0-17.0
PCT	0.251	%	0.108-0.282
P-LCC	66	$10^3/\mu\text{l}$	30-90
P-LCR	26.9	%	11.0-45.0



1.4 Sysmex XN-20

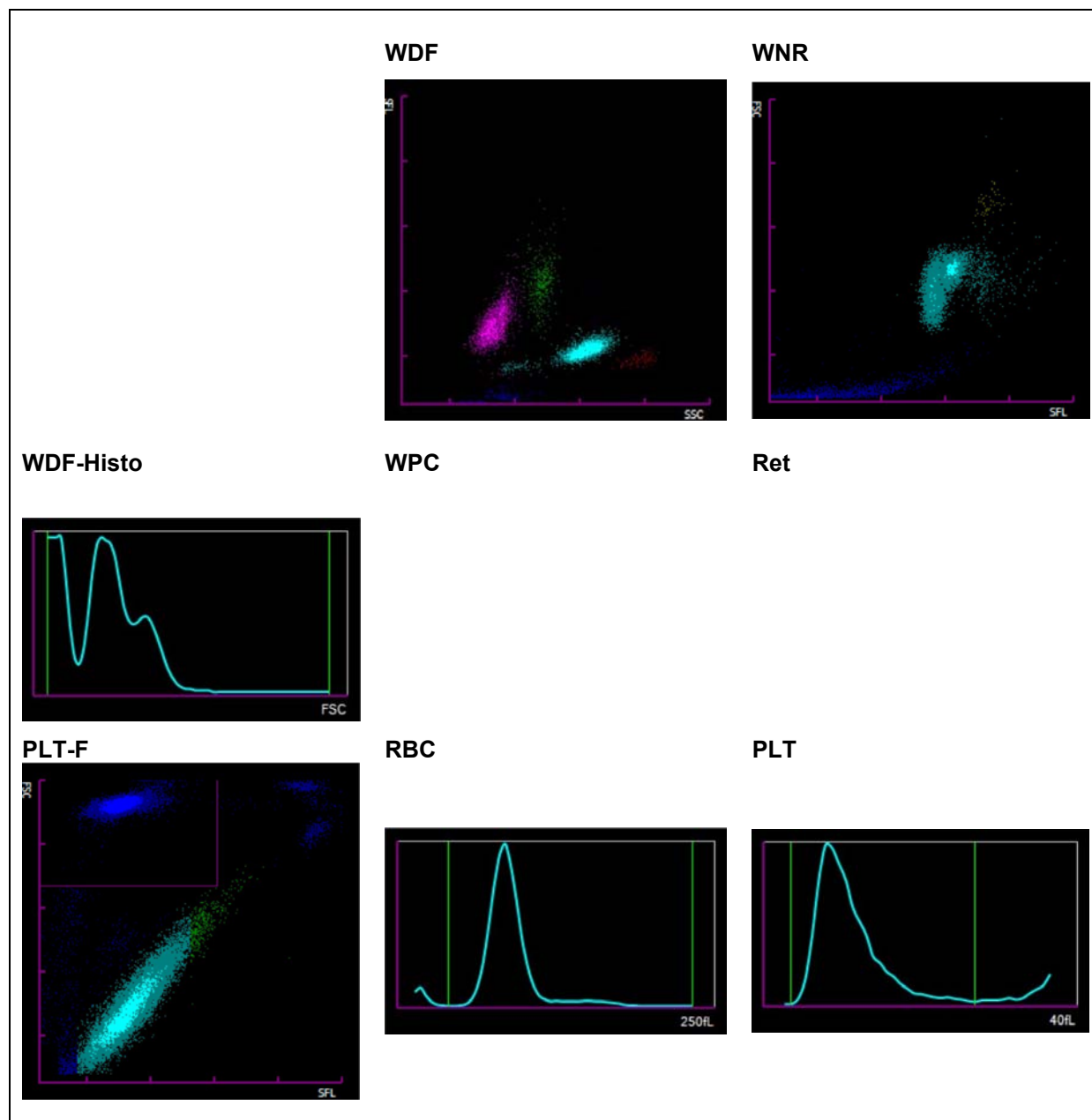


Findings MQ 2026-2 H3A

58 year old woman

Analysis	Result	Unit	Reference value
Blood Count			
<u>Hemoglobin</u>	140	g/l	117-153
<u>Hematocrit</u>	0.406	l/l	0.35-0.46
Erythrocytes	4.83	T/l	3.9-5.2
MCV	84.1	fl	80-100
MCH	29.0	pg	26-34
MCHC	345	g/l	310-360
Mikrocytes	13.2	%	11.0-14.8
<u>Thrombocytes</u>	261	G/l	143-400
<u>Leucocytes</u>	7.61	G/l	3.0-9.6
Leucocyte Differentiation			
Neutrophils	3.88	G/l	1.40 – 8.00
Monocytes	0.41	G/l	0.16 – 0.95
Eosinophils	0.11	G/l	0.00 – 0.70
Basophils	0.06	G/l	0.00-0.15
Lymphocytes	3.13	G/l	1.50 - 4.00
IG abs.	0.02	G/l	0.00 – 0.03
IG %	0.03	%	0.0 – 0.05
NRBC abs.	0.00	G/l	
NRBC	0.0	/100 Lc	

Findings HAD MQ 2026-2 H3A



1.5 Differential Blood Smear

Findings HAD 2026-2 H3A

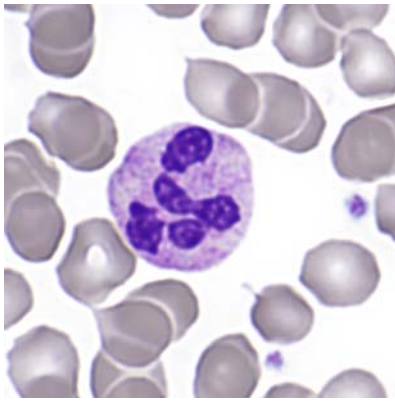
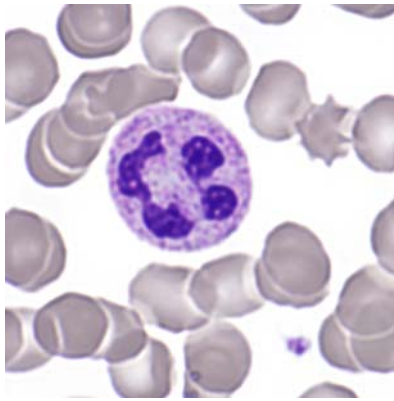
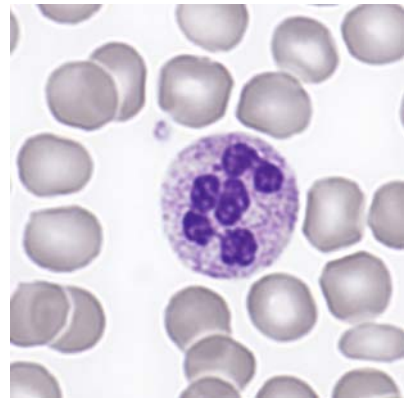
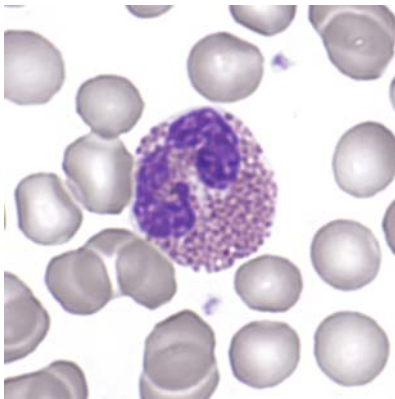
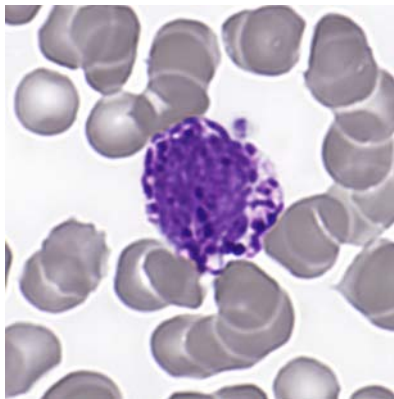
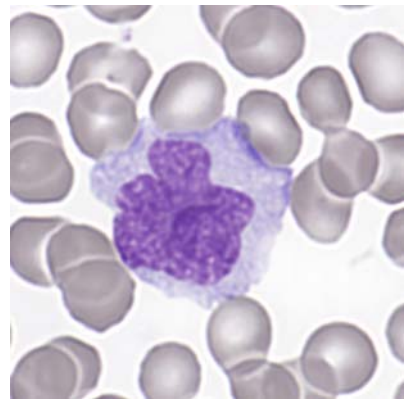
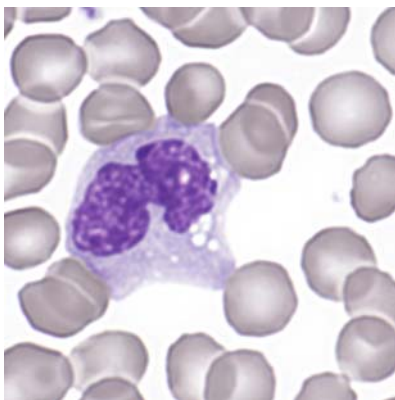
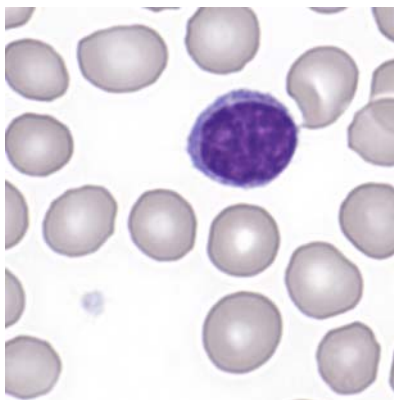
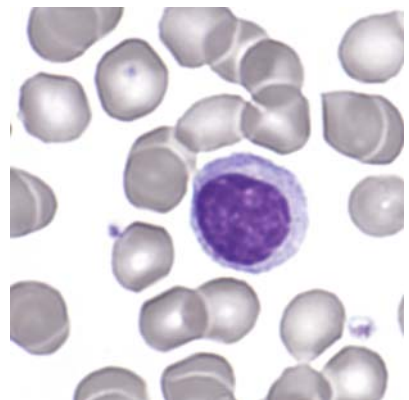
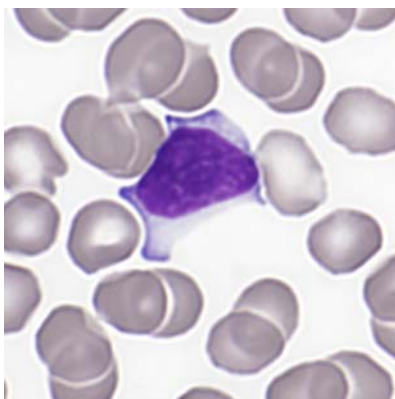
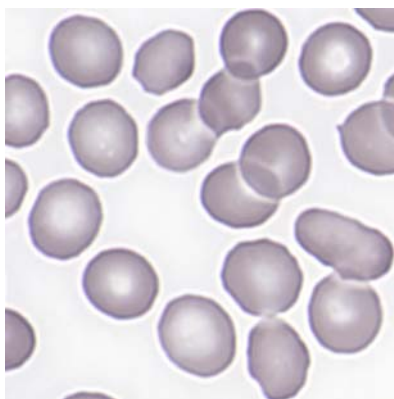
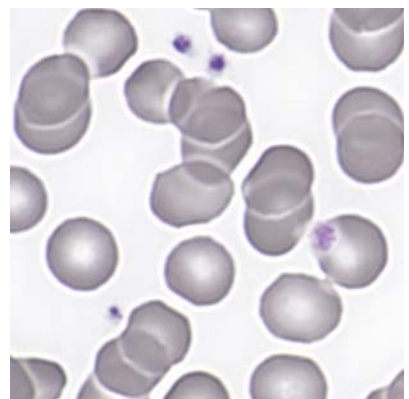
58 year old woman

Analysis	Result	Unit	Reference value
Neutrophile gesamt	4.11	G/l	1.40-8.00
Monocytes	0.23	G/l	0.16-0.95
Eosinophils	0.11	G/l	0.00-0.70
Basophils	0.38	G/l	0.00-0.15
Lymphocytes	3.12	G/l	1.50-4.00
White precursors	0.00	G/l	
Blasts	0.00	G/l	
Neutrophils total	0.00	%	40.0-74.0
Neutrophils Band	54.0	%	0.0-20.0
Neutrophils Segmented	2.5	%	30.0-50.0
Monocytes	* 51.5	%	3.4-9.0
Eosinophils	* 3.0	%	0.0-7.0
Basophils	1.5	%	0.0-1.5
Lymphocytes	0.5	%	19.0-48.0
Plasmacells	41	%	0-0.5
Blasts	0.0	%	0
Promyelocytes	0.0	%	0
Myelocytes	0.0	%	0
Metamyelocytes	0.0	%	0
Others / smudge cells	0.0	%	0

Commentary

Red blood cell count: normochromic, slightly anisocytic with a few microcytes. Mild poikilocytosis with a few ovalocytes. Neutrophils with slightly coarse cytoplasmic granulation; many with pyknotic nuclei. Lymphocytes atypical, probably showing mild reactive changes. Platelets morphologically unremarkable.

A. Sopran

*Abb 1. Neutrophiler (Seg)**Abb 2. Neutrophiler (Band)**Abb 3. Neutrophiler (Hyperseg.)**Abb 4 Eosinophile**Abb 5. Monocyte**Abb 6. Monocyte**Abb 7. Lymphocyte**Abb 8. platelet clump**Abb 9. Macro Platlet**Abb 10. Anisocytosis**Abb 11. Pokilozytosis**Abb 12. Platelets*

1.6 Summary of participant results

Leukocyte Differenzial H3-A

	0	1-4	5-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	>79
<i>Neutrophils Band</i>	18	73*	57	12	4						
<i>Neutrophils Segmented.</i>	11				2	15	95	38*	2		
<i>Eosinophils</i>	34	125*	4	1							
<i>Basophile</i>	54	102*	2						1		
<i>Monocytes</i>	11	115*	37								
<i>Lymphocytes</i>	11	1			5	36	105*	6			
<i>Plasmacells</i>	140*	1	2								
<i>Blasts</i>	142*										
<i>Promyelocytes</i>	142*										
<i>Myelocytes</i>	142*										
<i>Metamyelozyten</i>	140*	2									
<i>Erythrocytes Nucleated</i>	141*										1
<i>Unknown</i>	142*										
<i>Smudge cells</i>	128*	13	5	1		1					

Evaluation H3-A

	light	medium	strong		light	medium	strong
<i>Hypersegmentation</i>	27	2	1	<i>Hypochromic Ec</i>	6	2	
<i>Pelger-Huet Anomaly</i>				<i>Polychromatic Ec</i>	12	1	
<i>Coarse Granulation</i>	59*	13	2	<i>Anisocytes</i>	75*	4	
<i>Basophilic Stripling</i>	9	1		<i>Mikrocytes</i>	35*	4	
<i>Vacuoles</i>	12	2		<i>Makrocytes</i>	7	1	
<i>Reaktive Lymphocytes</i>	58*	6		<i>Megalocytes</i>	1		
<i>Atypical Lymphocytes</i>	5	2	3	<i>Poikilocytosis</i>	48*	4	
<i>Others</i>	2			<i>Ovalocytes</i>	44*	3	
				<i>Target Cells</i>	2		
				<i>Akanthocytes</i>	9		
<i>Anisocytosis</i>	65	4		<i>Echinocytes</i>	10		
<i>Megakaryocyte Nucleus</i>	4	1		<i>Sickle Cells</i>	1		
<i>Granulation</i>	7	1		<i>Fragmentocytes</i>	5		
<i>Others</i>	4			<i>Spherocytes</i>	2		
				<i>Stomatocytes</i>	1		
				<i>Basophilic Stripling</i>	1		
				<i>Howell-Jolly Bodies</i>	2		
				<i>Pappenheim Bodies</i>			
				<i>Others</i>	2		

The blood from sample H3A came from a healthy female member of staff. The smear showed a small number of atypical lymphocytes, which is why we did not wish to classify the 'pathological' result as incorrect. The Qualab code was therefore not assessed.

1.7 Qualab Codes

Summary of the participant codes
(Bold printed: expected codes)

Code	Text	Number
29	Normal findings (do not add any other codes)	134
5	Atypical lymphocytes presumably reactive	41
4	Toxic signs of neutrophils	26
31	Pathologic findings, not referred to expert	24
16	Poikilocytosis	19
30	Pathologic findings, refer to expert	18
12	Microcyten	17
1	Hypersegmentation	16
17	Elliptocytes/Ovalocytes	16
6	Atypical lymphocytes probably neoplastic	10
9	Giant platelet	8
8	Lc Others	8
27	Ec Others	7
14	Hypochromasia	6
26	Tear drops	5
20	Fragmentocytes	3
11	Tc Others	3
10	Platelet aggregates	2
13	Macrocytes	2
22	Rouleaux	2
15	Polychromasia	1
25	Basophilic strippling	1
24	Howell-Jolly bodies	1

2 Sample B

2.1 ABX Microsemi CRP



Findings MQ 2026-2 H3B

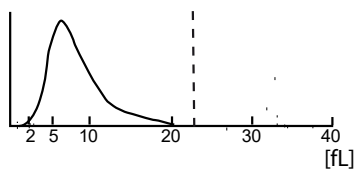
70 year old man

WBC :	11.7	H	$10^3/\mu\text{L}$	MCV :	91.2	B	μm^3
RBC :	3.57	L	$10^6/\mu\text{L}$	MCH :	28.9		pg
HGB :	10.3	L	g/dL	MCHC:	31.7		g/dL
HCT :	32.5	L	%	RDW :	13.2		%
PLT :	380	B	$10^3/\mu\text{L}$	MPV :	6.3		μm^3
PCT :	0.241	B	%	PDW :	13.1	B	%

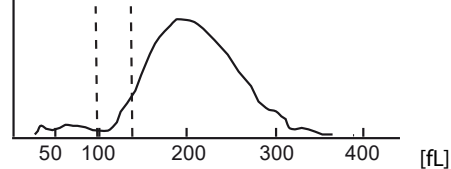
WBC Flags

DIFF:							
%LYM:	5.6	L	%	#LYM:	0.7	L	$10^3/\mu\text{L}$
%MON:	4.9		%	#MON:	0.6		$10^3/\mu\text{L}$
%GRA:	89.5	H	%	#GRA:	10.4	H	$10^3/\mu\text{L}$

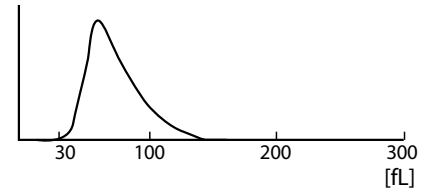
PLT



WBC



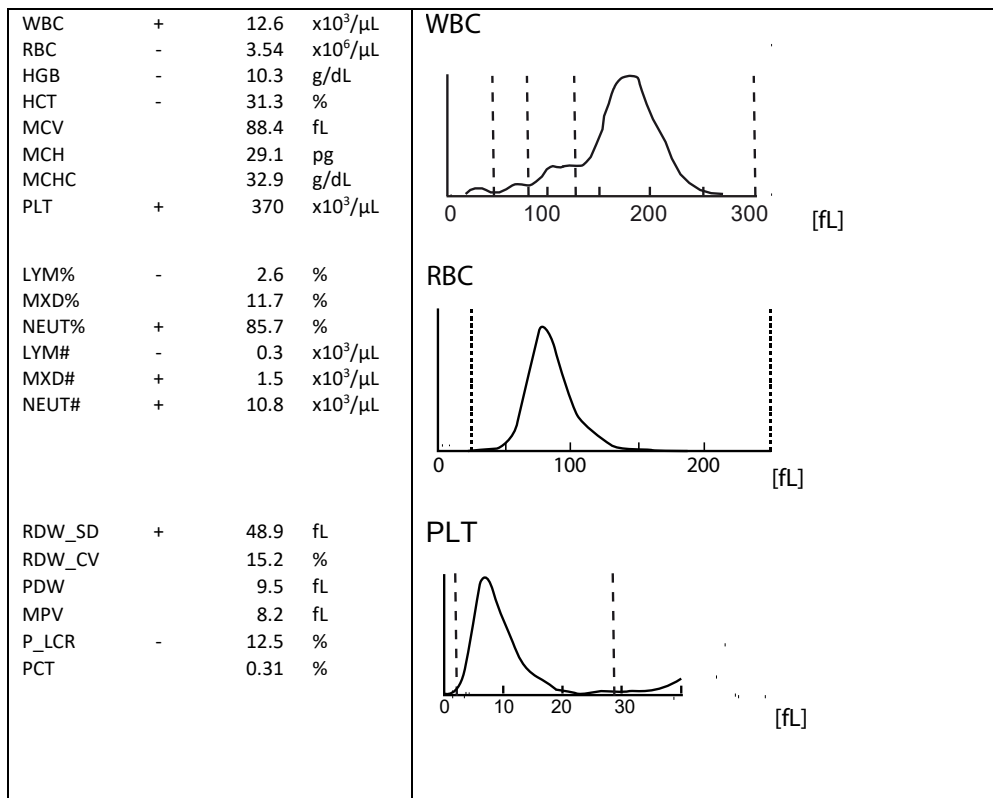
RBC



2.2 Sysmex XP300



Findings MQ 2026-2 H3B 70 year old man



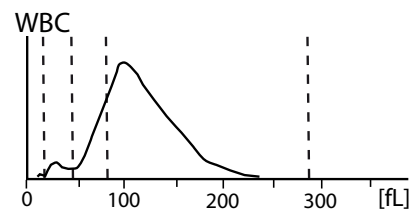
2.3 Zybio Z3 CRP



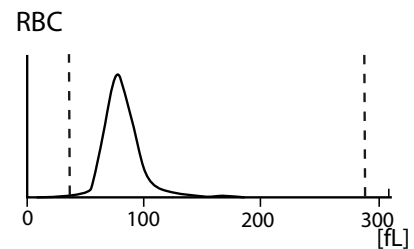
Findings MQ 2026-2 H3B

70 year old man

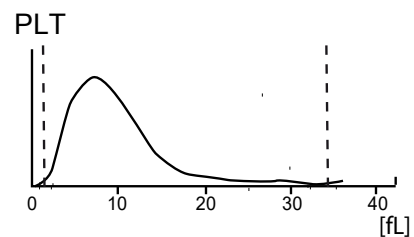
WBC	11.8	↑	10 ³ /μl	3.50-9.50
Lym#	0.76	↓	10 ³ /μl	1.10-3.20
Mid#	0.63		10 ³ /μl	0.10-3.20
Gran#	10.48	↑	10 ³ /μl	1.80-6.30
Lym%	6.4	↓	%	20.0-50.0
Mid%	5.3		%	3.0-15.0
Gran%	88.3	↑	%	40.0-75.0



RBC	3.52	↓	10 ⁶ /μl	3.80-5.80
HGB	10.1	↓	g/dl	11.5-17.5
HCT	29.7	↓	%	35.0-50.0
MCV	84.5		fL	82.0-100.0
MCH	28.8		pg	27.0-34.0
MCHC	34.1		g/dl	31.6-35.4



RDW-CV	15.3		%	11.5-16.0
RDW-SD	44.1		fL	35.0-56.0
PLT	333		10 ³ /μl	125-350
MPV	8.6		fL	6.5-12.0
PDW	15.7		fL	9.0-17.0
PCT	0.287	↑	%	0.108-0.282
P-LCC	47		10 ³ /μl	30-90
P-LCR	14.2		%	11.0-45.0



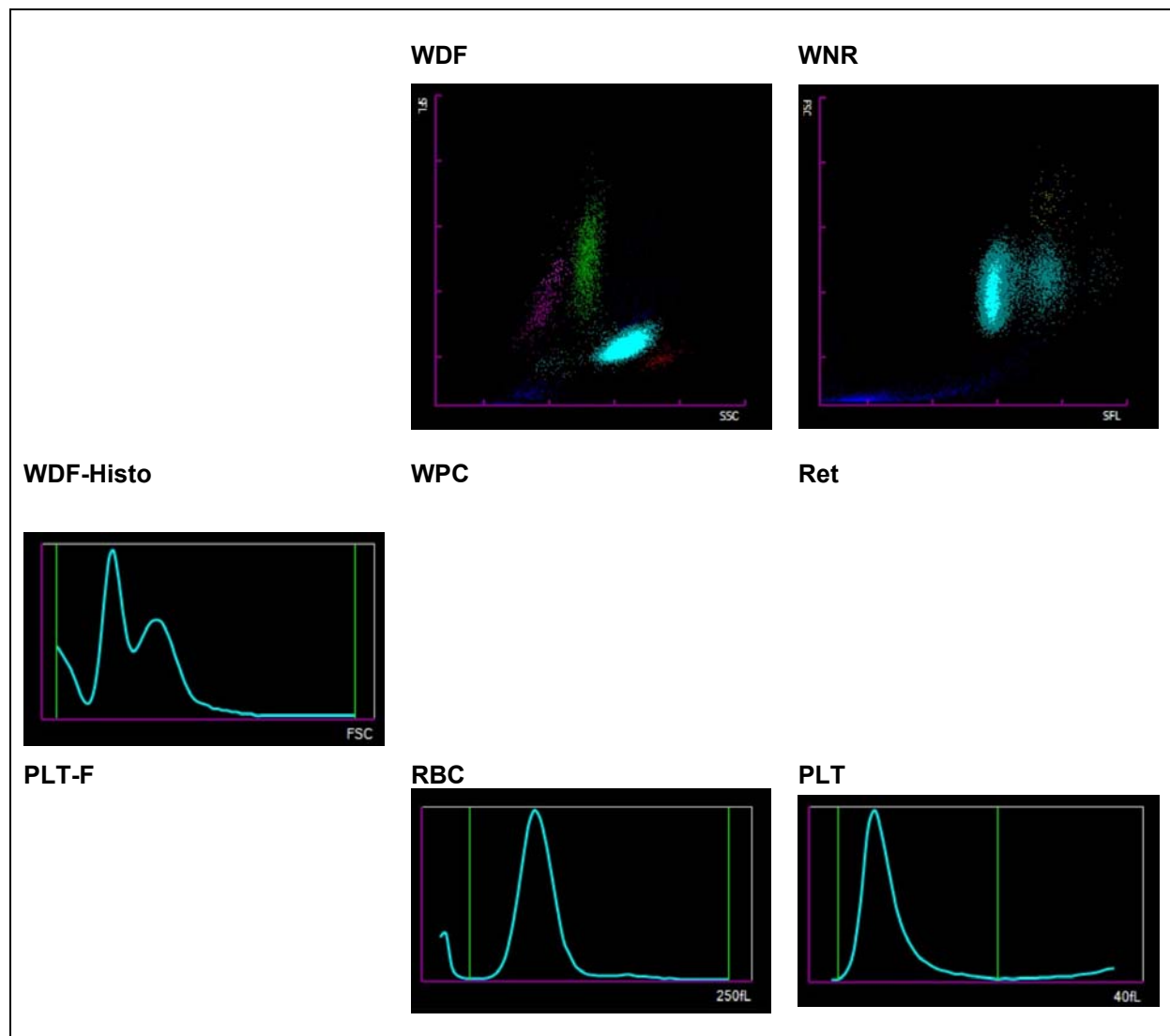
2.4 Sysmex XN-20



Findings MQ 2026-2 H3B

70 year old man

Analysis	Result	Unit	Reference value
Blood Count			
Hemoglobin	* 102	g/l	117-153
Hematocrit	* 0.300	l/l	0.35-0.46
Erythrocytes	* 3.46	T/l	3.9-5.2
MCV	86.7	fl	80-100
MCH	29.5	pg	26-34
MCHC	340	g/l	310-360
Thrombocytes	338	G/l	143-400
Leucocytes	* 13.58	G/l	3.0-9.6
Leucocyte Differentiation			
Neutrophils	* 11.31	G/l	1.40-8.00
Monocytes	* 1.55	G/l	0.16-0.95
Eosinophils	0.12	G/l	0.00-0.70
Basophils	0.08	G/l	0.00-0.15
Lymphocytes	* 0.41	G/l	1.50-4.00
IG abs.	* 0.11	G/l	0.00-0.03
IG %	* 0.8	%	0.0-0.5
NRBC abs.	0.00	G/l	
NRBC	0.0	/100 Lc	

Findings HAD MQ 2026-2 H3B

2.5 Differential Blood Smear

Findings MQ 2026-2 H3B

70 year old man

Analysis		Result	Unit	Reference value
Leucocytes Differentiation				
Neutrophile gesamt	*	11.34	G/l	1.40-8.00
Monozyten	*	1.43	G/l	0.16-0.95
Eosinophile		0.0	G/l	0.00-0.70
Basophile	*	0.27	G/l	0.00-0.15
Lymphozyten	*	0.54	G/l	1.50-4.00
Erythroblasten		0.0	/100 Lc	
Neutrophile gesamt	*	83.5	%	40.0-74.0
Neutrophile Stabker.		13	%	0.0-20.0
Neutrophile Segmentk.	*	70.5	%	30.0-50.0
Monozyten	*	10.5	%	3.4-9.0
Eosinophile		0.0	%	0.0-7.0
Basophile	*	2.0	%	0.0-1.5
Lymphozyten	*	4.0	%	19.0-48.0
Plasmazellen		0.0	%	0-0.5
Blasten		0.0	%	0
Promyelozyten		0.0	%	0
Myelozyten		0.0	%	0
Metamyelozyten		0.0	%	0
Andere / Länderte Zellen		0.0	%	0

Commentary

Red blood cell count: normochromic, slightly anisocytic with a few microcytes. Slight polychromasia. Neutrophils with coarse cytoplasmic granulation; a few with fine basophilic streaks. One myelocyte visible when held up to the light. Many platelets are hypogranulated; a cluster of platelets is visible when held up to the light.

A. Sopran

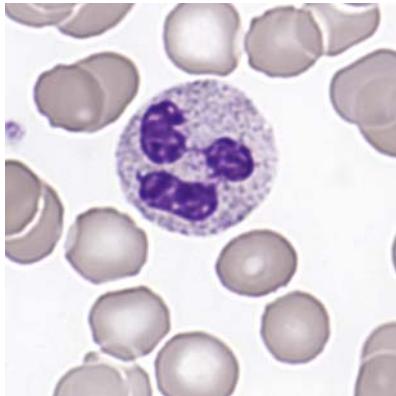


Abb 1. Neutrophile (Seg)

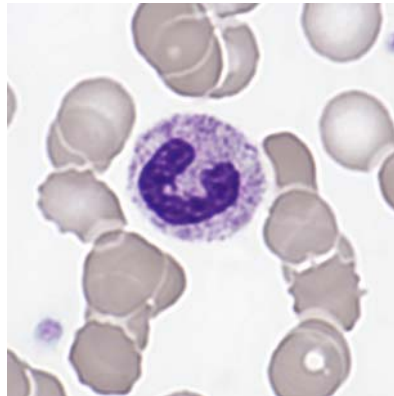


Abb 2. Neutrophile (Seg)

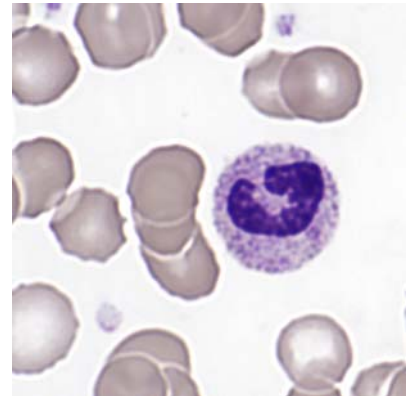


Abb 3. Eosinophile

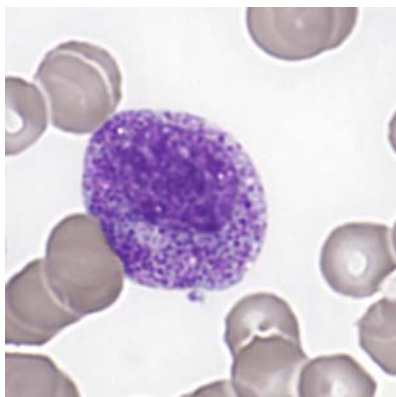


Abb 4. Basophile

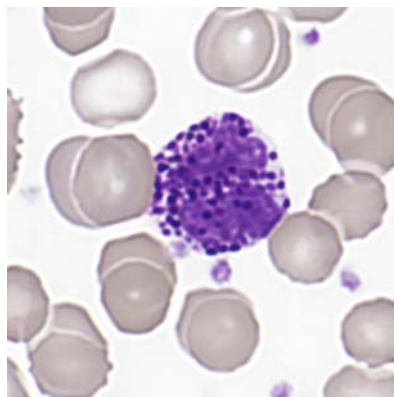


Abb 5. Monocyte

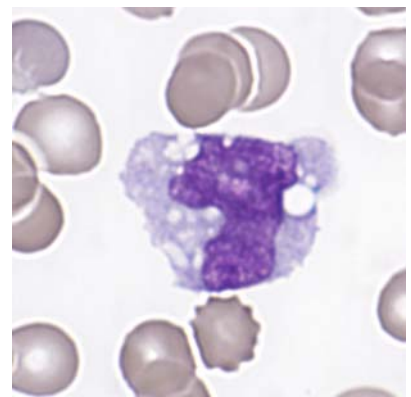


Abb 6. Monocyte

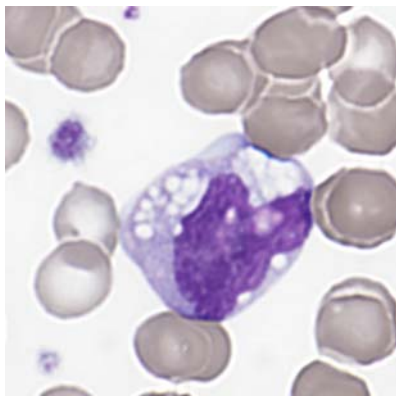


Abb 7. Lymphocyte

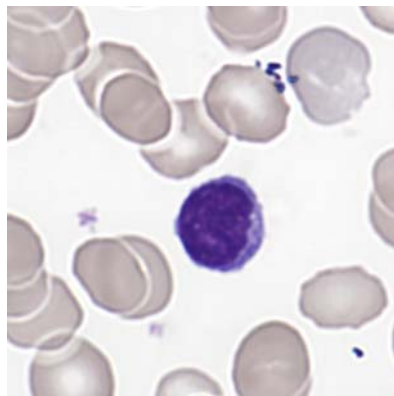


Abb 8. Lymphocyte

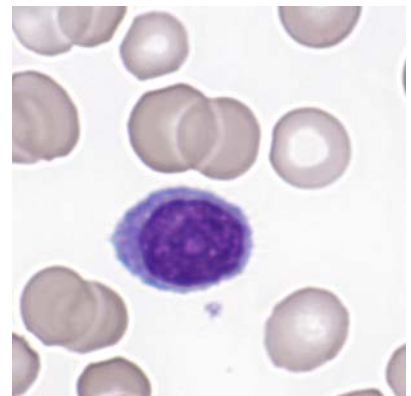


Abb 9. Lymphocyte

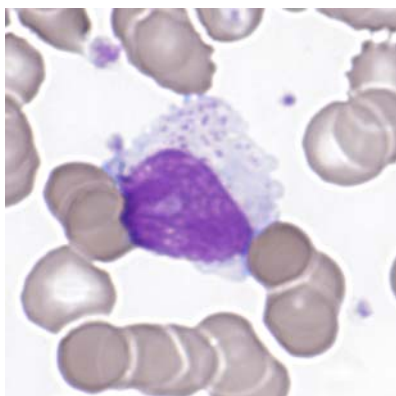


Abb 10. Giant Platelet

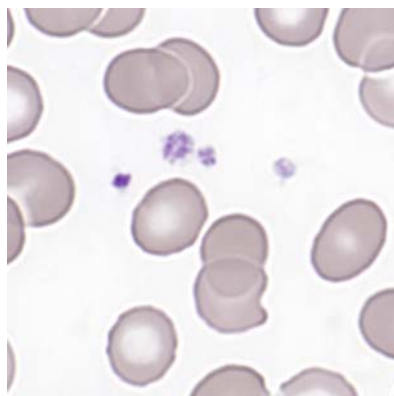


Abb 11. Giant Platelet

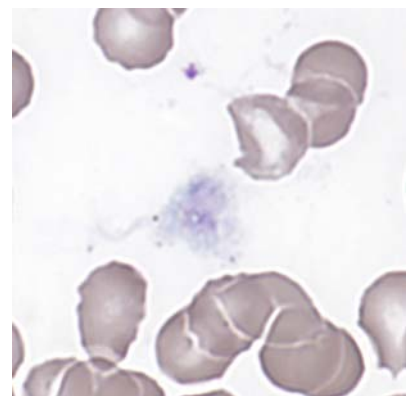


Abb 12. Platelet Anisocytosis

2.6 Summary of participant results

Leukocyte Differential H3-B

	<1	1-4	5-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	>79
<i>Neutrophils Band</i>	12	9	21	84*	28	3	3	2	1		
<i>Neutrophils Segmented.</i>	11			1	1	1	6	10	51	68*	14
<i>Eosinophils</i>	65*	91									
<i>Basophile</i>	79	71*	3								
<i>Monocytes</i>	13	13	81	55*							
<i>Lymphocytes</i>	12	103*	41	6			1				
<i>Plasmacells</i>	141*	1									
<i>Blasts</i>	141*	1									
<i>Promyelocytes</i>	141*										
<i>Myelocytes</i>	141*	1									
<i>Metamyelozyten</i>	140*	2									
<i>Erythrocytes Nucleated</i>	137*	3									1
<i>Unknown</i>	140*	1									
<i>Smudge cells</i>	134*	9				1					

Evaluation H3-B

	light	medium	strong		light	medium	strong
<i>Hypersegmentation</i>	21	2		<i>Hypochromic Ec</i>	71	30	4
<i>Pelger-Hüet Anomaly</i>	4			<i>Polychromatic Ec</i>	91*	10	
<i>Coarse Granulation</i>	78	54*	3	<i>Anisocytes</i>	87*	45	2
<i>Basophilic Stripling</i>	60*	2	1	<i>Mikrocytes</i>	45*	6	2
<i>Vacuoles</i>	73	9		<i>Makrocytes</i>	57	10	
<i>Atypical Lymph, reactive</i>	11	2	1	<i>Megalocytes</i>	4	4	
<i>Atypical Lymph, neoplastic</i>				<i>Poikilocytosis</i>	74	10	1
<i>Others</i>	2			<i>Ovalocytes</i>	49	2	1
				<i>Target Cells</i>	54	2	
				<i>Akanthocytes</i>	35	1	
<i>Anisocytosis</i>	89	11	2	<i>Echinocytes</i>	28	3	
<i>Megakaryocyte Nucleaus</i>	8			<i>Sickle Cells</i>	1		
<i>Granulation</i>	20*	5		<i>Fragmentocytes</i>	20		
<i>Others</i>	9			<i>Spherocytes</i>	14	1	
				<i>Stomatocytes</i>	2		
				<i>Basophilic Stripling</i>	1		
				<i>Howell-Jolly Bodies</i>	2		
				<i>Pappenheim Bodies</i>			
				<i>Others</i>	6	1	

The blood sample H3B was obtained from a patient with pneumonia.

2.7 Qualab Codes

Summary of the participant codes
(Bold printed: expected codes)

Code	Text	Number
4	Toxic signs of neutrophils	103
31	Pathologic findings, not referred to expert	87
15	Polychromasia	55
2	Left shift	52
14	Hypochromasia	52
30	Pathologic findings, refer to expert	51
16	Poikilocytosis	41
13	Macrocytes	27
19	Targetcells	26
12	Microcyten	17
29	Normal findings (do not add any other codes)	14
22	Rouleaux	11
8	Lc others	11
17	Elliptocytes/Ovalocytes	10
9	Giant platelet	10
20	Fragmentocytes	10
27	Ec others	10
21	Spherocytes/Microspherocytes	8
10	Platelet aggregates	7
11	Tc others	7
1	Hypersegmentation	3
5	Atypical lymphocytes presumably reactive	3
24	Howell-Jolly bodies	1
26	Tear drops	1
23	Erythrocyte agglutination	1
3	Pelger-Huet Abnormaly	1