LABQUALITY

External Quality Assessment Scheme

Leucocyte Differential Count and Evaluation of Blood Cell Morphology, virtual Round 1, 2023

Specimens
Three May-Grünwald-Giemsa stained virtual microscopical slides S001, S002 and S003 are available in LabScala.

Background information
Patient's age, sex and some data of clinical history are given.

Parameters
Leucocyte Differential Count
Evaluation of Blood Cell Morphology

Results
Please return the results via LabScala (www.labscala.com). This round will open 15.5.2023 in LabScala.

1. After logging in the result page opens for the differential count. Please fill in the results and add the date and copy it for all rows.

2. Click "Case 1" and the virtual microscopy picture appears.

3. In this view you can make the view smaller of bigger by clicking or by choosing the magnification on the upper right corner. The view can be moved by pressing the mouse with the left button and moving it at the same time. Perform the differential count as usual. Return to the dropdown menu by shutting the sheet and save the results as percentage. Note that the sum must be 100%. The result fields cannot be left empty. Fill in 0 (zero) if there aren`t any findings.

4. Move to the menus of the evaluation of blood cell morphology. Menu appears when replying 'No' to the question: 'Normal blood film, no abnormalities?' Fill in results.

5. First choose Main group→ Finding→ Scale. When pressing the + sign at the right side of the page, you get another new result menu. Save the respondent identification. Save as draft if you want to return to change the findings later.

6. Move always forward by pressing the green Next- button. After that you will proceed to the sample S002.

7. Repeat with every sample and finally press Accept the results and send. Always use the Save & Next button, this will take you through the process easily.

2023-05-15

INSTRUCTIONS

Product no. 4180
LQ711923011-013/FI

Subcontracting:
Sample preparation

The results should be reported no later than **June 6, 2023**.

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Leucocyte Differential Count
Results should be expressed as percentages without decimals. Please check that the total sum is 100%. This is not done automatically.

- Do not include erythroblasts in the leucocyte differential count. Please report them as nucleated red cells.
- Do not include smeared, disrupted nuclear remnants of leucocytes (”Gumbrecht´s shadows”) in the differential count.

Evaluation of Blood Cell Morphology
First you need to answer the question if the blood film is normal or not:
Normal blood film, no abnormalities?

Enter abnormal findings and describe the changes using a scale as below:

- Slight change (scarcely discernible)
- Clear change (e.g. the platelet count clearly decreased)
- Strong change (e.g. plenty of spherocytes)

Case S001

Erythrocytes

		Slight	Clear	Strong
Altered grouping	Agglutination	0	1	0
	Rouleaux	2	1	0
Cell maturation	Nucleated red cells	◉ 76	23	0
	Polychromatophilia	66	25	3
Inclusion bodies	Basophilic stipling	0	0	1
	Howell-Jolly bodies	3	0	0
	Pappenheimer bodies	1	0	0
Size/shape/Hb-concentration	Achantocytes	4	1	1
	Anisocytosis	◉ 64	60	10
	Echinocytes/Burr-cells	7	2	0
	Hypochromic microcytes	13	6	1
	Macro-ovalocytes	12	7	1
	Ovalocytes/elliptocytes	7	7	0
	Pencil shaped cells	4	1	0
	Poikilocytosis	◉ 52	29	3
	Round macrocytes	10	9	2
	Schiztocytes/fragm.cells	9	4	1
	Spherocytes	55	35	6
	Target-cells	2	0	1
	Tear drop shaped cells	30	9	1

Leucocytes

		Slight	Clear	Strong
Altered amount of cells	Leucocytosis	3	9	◉ 161
Granulocyte morphology	Auer rods / bodies	1	1	0
	Hypersegmentation	7	5	1
	Hypogranulation	1	0	0
	Irregularly shaped lobi	5	3	2
	Pelger-Hüet anomaly	2	2	0
	Toxic granulation	38	24	22
Lymphocyte morphology	Atypical lymphocytes	2	2	0
	Prolymphocytes	1	0	0
Monocyte morphology	Atypical monocytes	3	2	0
	Promonocytes/monoblasts	3	0	1
Proportions of cells	Basophilia	6	5	4
	Blasts	38	◉ 13	3
	Eosinophilia	1	4	0
	Left shift	8	31	◉ 108
	Lymphocytosis	2	1	0
	Lymphopenia	6	18	52
	Monocytosis	0	0	3
	Neutropenia	1	0	0
	Neutrophilia	1	11	◉ 56

Platelets

		Slight	Clear	Strong
Altered amount of cells	Thrombocytopenia	0	1	0
	Thrombocytosis	1	1	1

Case S002

Erythrocytes

		Slight	Clear	Strong
Altered grouping	Agglutination	6	2	0
	Rouleaux	4	2	0
Cell maturation	Nucleated red cells	1	3	0
	Polychromatophilia	◉ 10	11	1
Inclusion bodies	Basophilic stipling	4	1	0
	Howell-Jolly bodies	11	4	0
	Pappenheimer bodies	2	0	0
Size/shape/Hb-concentration	Achantocytes	3	3	0
	Anisocytosis	51	29	3
	Echinocytes/Burr-cells	4	2	0
	Hypochromic microcytes	10	5	0
	Macro-ovalocytes	6	3	1
	Ovalocytes/elliptocytes	7	11	1
	Pencil shaped cells	1	1	0
	Poikilocytosis	43	◉ 35	3
	Round macrocytes	6	1	0
	Schiztocytes/fragm.cells	9	4	2
	Spherocytes	◉ 23	18	2
	Target-cells	◉ 53	21	3
	Tear drop shaped cells	28	21	2

Leucocytes

		Slight	Clear	Strong
Altered amount of cells	Leucocytosis	76	20	1
	Leucopenia	1	2	4
Granulocyte morphology	Hypersegmentation	8	2	3
	Hypogranulation	2	0	0
	Irregularly shaped lobi	2	1	1
	Pelger-Hüet anomaly	2	0	0
	Toxic granulation	19	20	1
Lymphocyte morphology	Atypical lymphocytes	15	13	3
	Plasma cells	1	0	0
	Prolymphocytes	2	1	0
Monocyte morphology	Atypical monocytes	1	1	0
	Promonocytes/monoblasts	1	0	0
Proportions of cells	Blasts	1	1	0
	Left shift	12	2	1
	Lymphocytosis	0	0	1
	Lymphopenia	7	9	2
	Monocytosis	2	0	0
	Neutropenia	0	0	1
	Neutrophilia	◉ 36	21	6

Platelets

		Slight	Clear	Strong
Altered amount of cells	Thrombocytopenia	2	8	◉ 178

Case S003

Erythrocytes

		Slight	Clear	Strong
Altered grouping	Agglutination	1	0	0
	Rouleaux	4	3	0
Cell maturation	Nucleated red cells	19	4	0
	Polychromatophilia	31	◉ 62	32
Inclusion bodies	Basophilic stipling	6	1	0
	Howell-Jolly bodies	7	3	0
	Pappenheimer bodies	2	0	0
Size/shape/Hb-concentration	Achantocytes	15	4	1
	Anisocytosis	29	◉ 63	76
	Echinocytes/Burr-cells	16	7	0
	Hypochromic microcytes	33	44	18
	Macro-ovalocytes	22	17	6
	Ovalocytes/elliptocytes	8	3	1
	Pencil shaped cells	2	1	0
	Poikilocytosis	35	45	30
	Round macrocytes	16	25	4
	Schiztocytes/fragm.cells	12	7	1
	Spherocytes	39	19	5
	Target-cells	5	7	1
	Tear drop shaped cells	50	20	2

Leucocytes

		Slight	Clear	Strong
Altered amount of cells	Leucocytosis	8	22	◉ 130
Granulocyte morphology	Hypogranulation	0	1	0
	Irregularly shaped lobi	0	0	1
	Toxic granulation	3	5	0
Lymphocyte morphology	Atypical lymphocytes	20	16	23
	Plasma cells	0	2	0
	Prolymphocytes	13	2	4
Proportions of cells	Blasts	3	0	0
	Lymphocytosis	2	6	◉ 156
	Neutropenia	6	9	69
	Neutrophilia	3	0	0

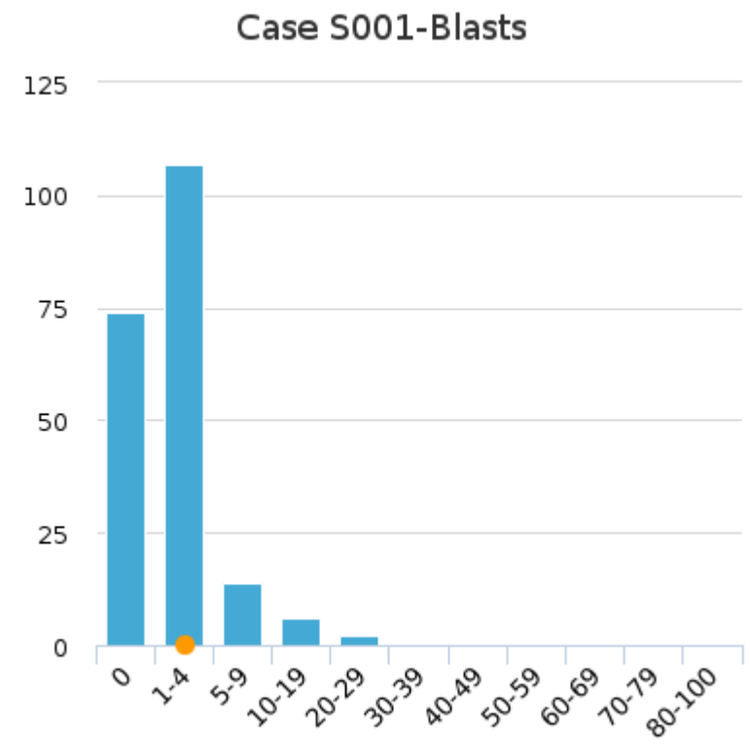
Platelets

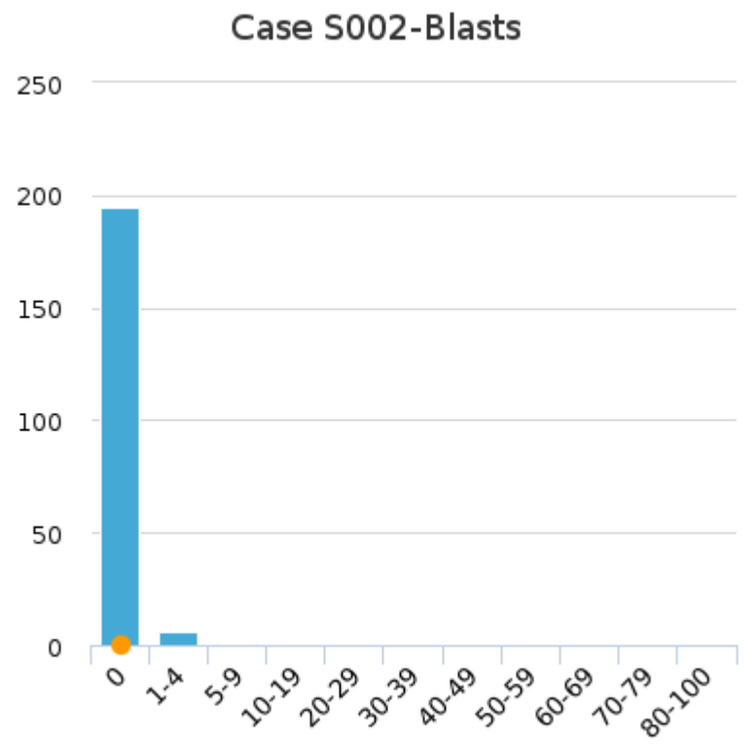
		Slight	Clear	Strong
Altered amount of cells	Thrombocytopenia	0	0	1
	Thrombocytosis	4	1	1

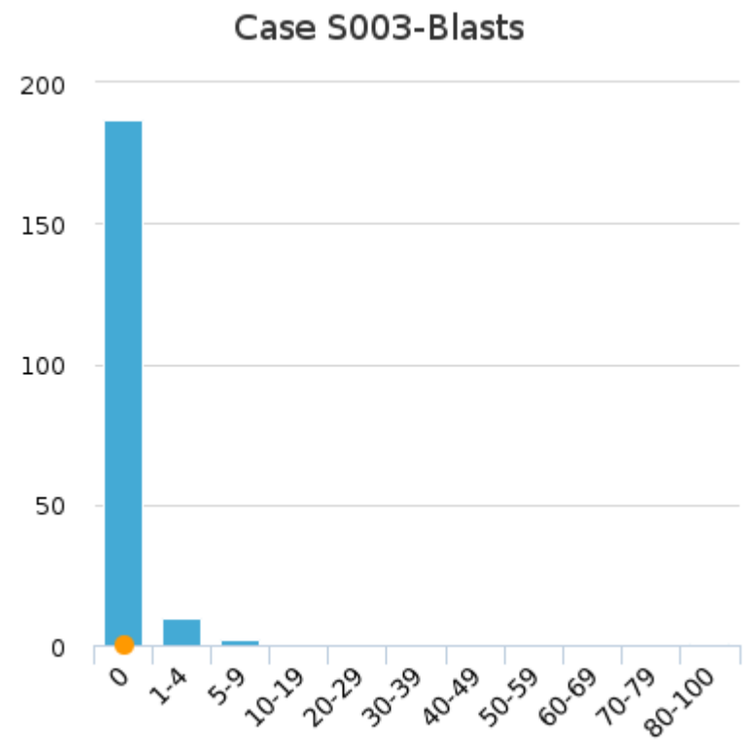
Leucocyte differential count and evaluation of blood cell morphology, virtual microscopy, May, 1-2023

Differential Count of White Blood Cells

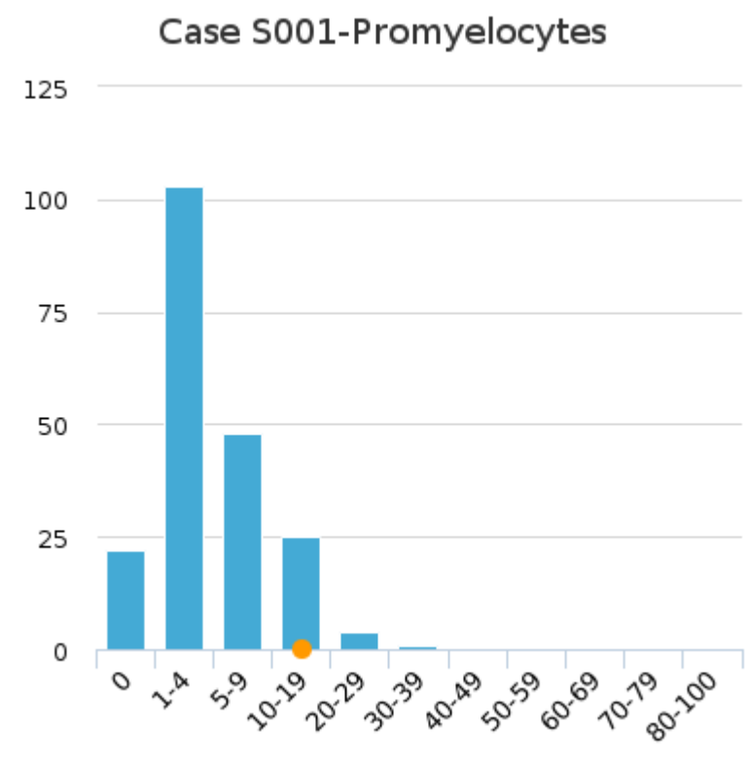
Blasts

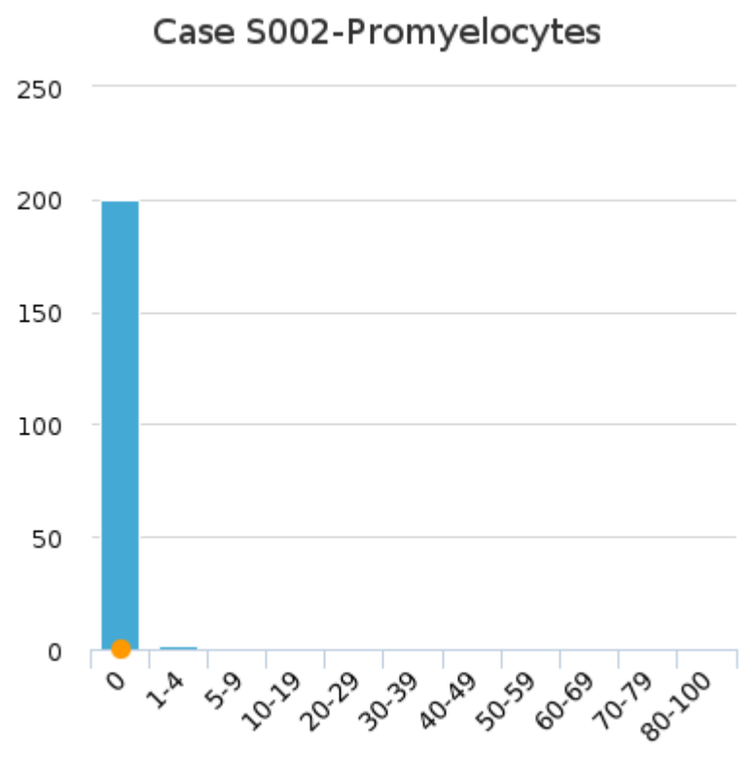


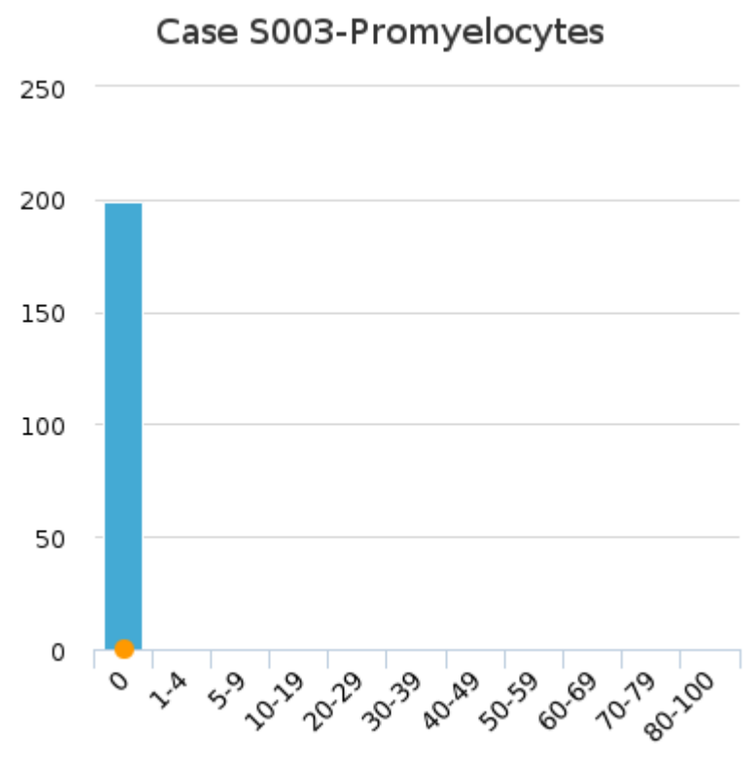




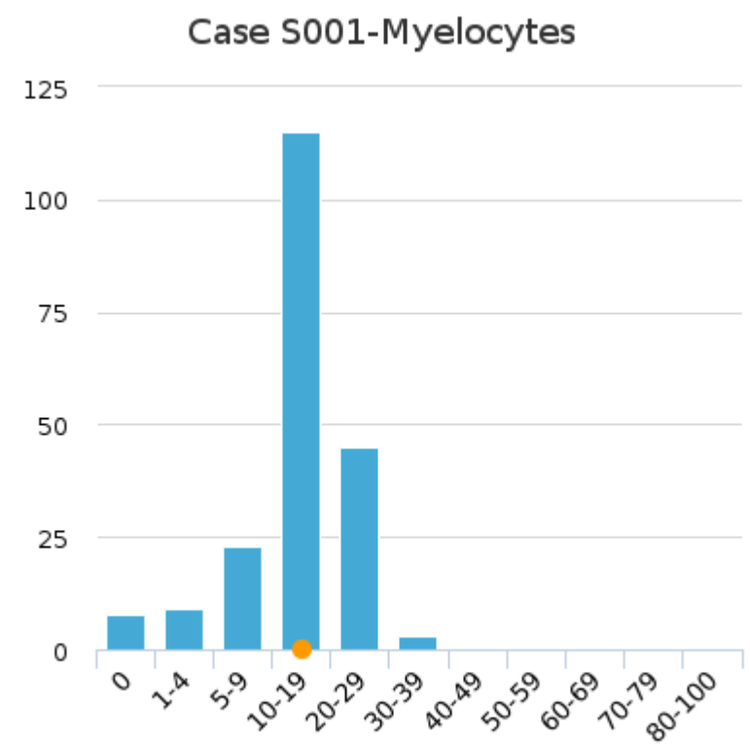
Promyelocytes |HEM

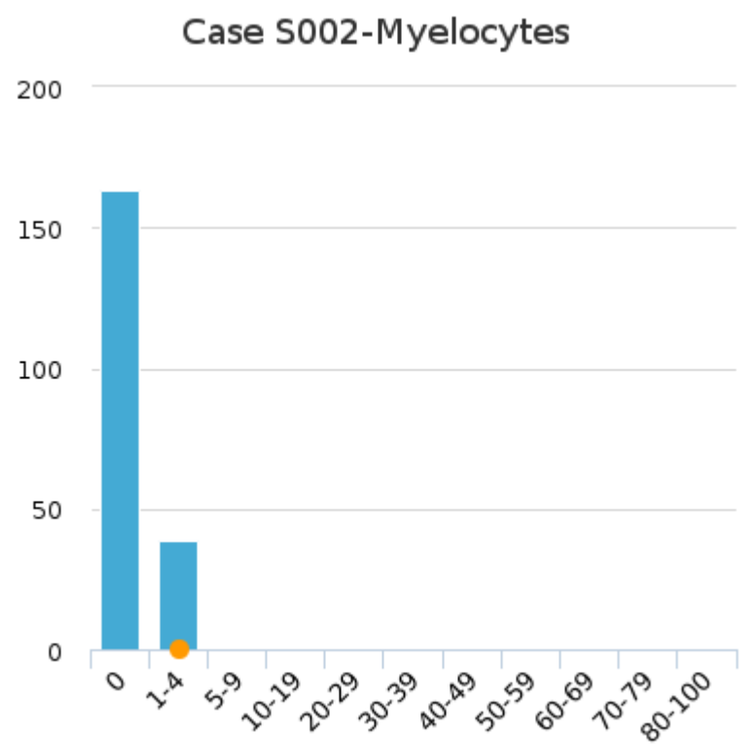


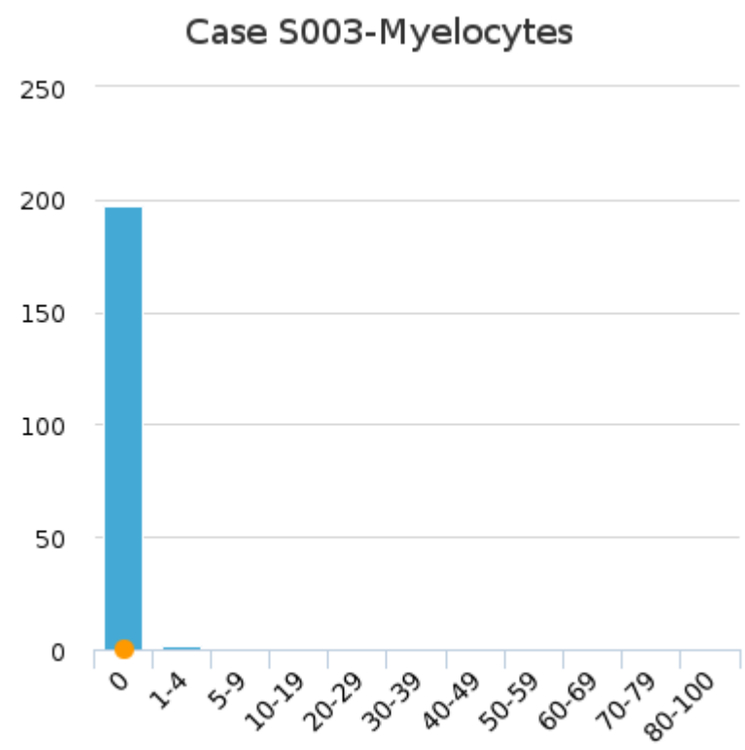




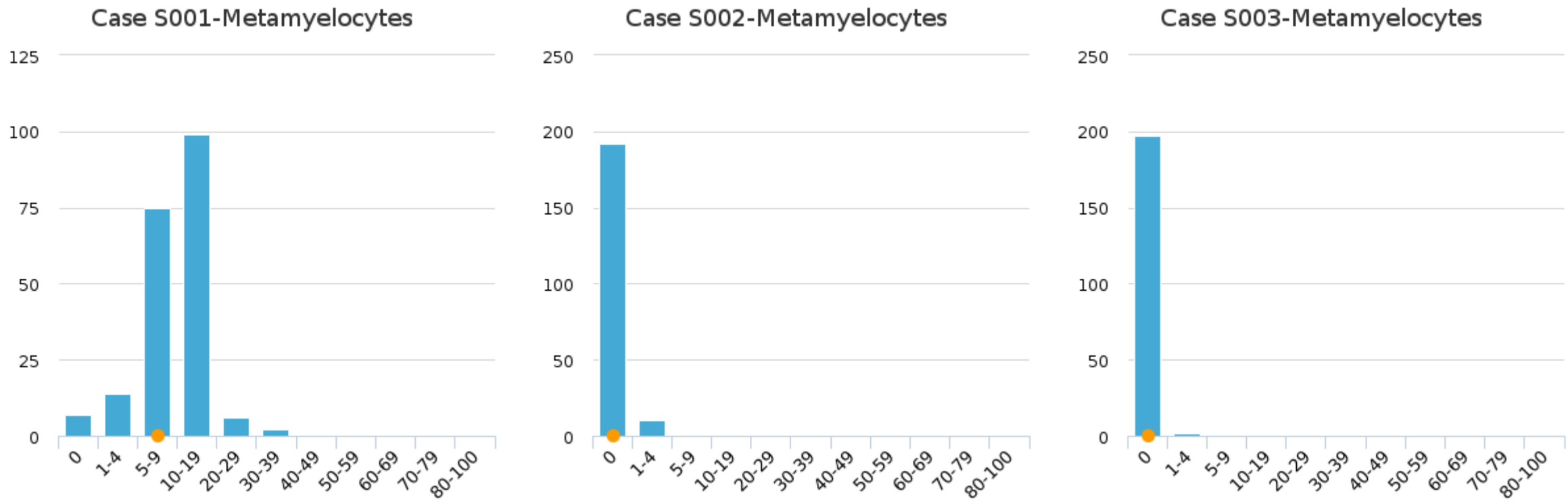
Myelocytes |HEM



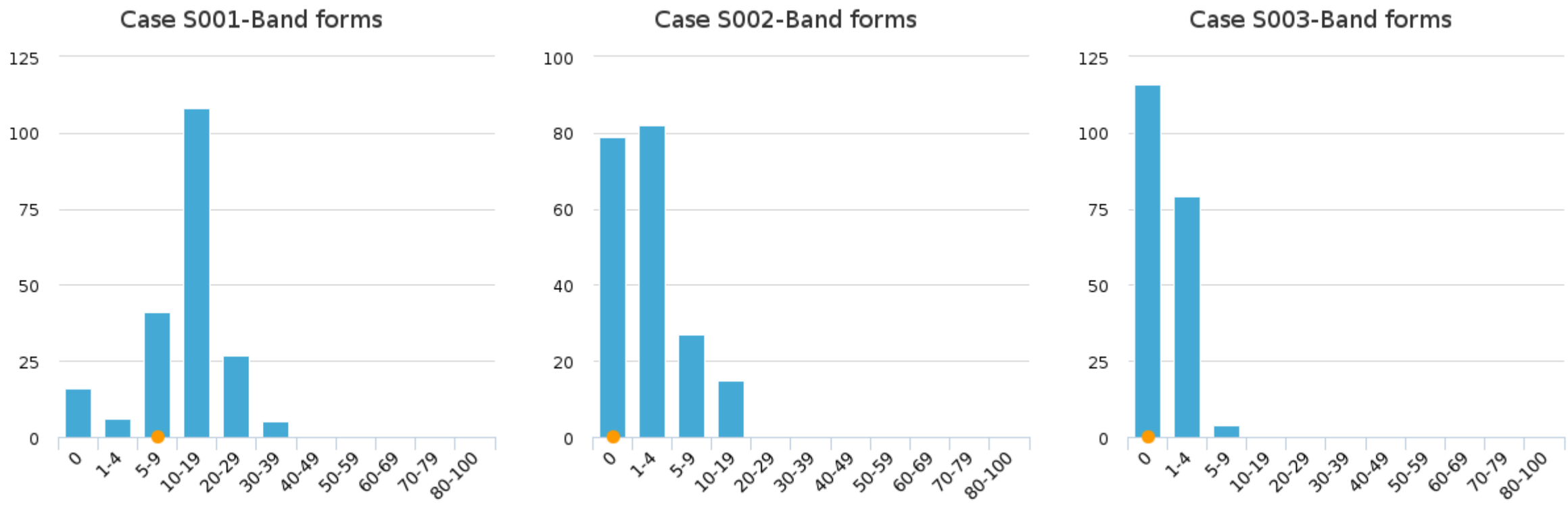




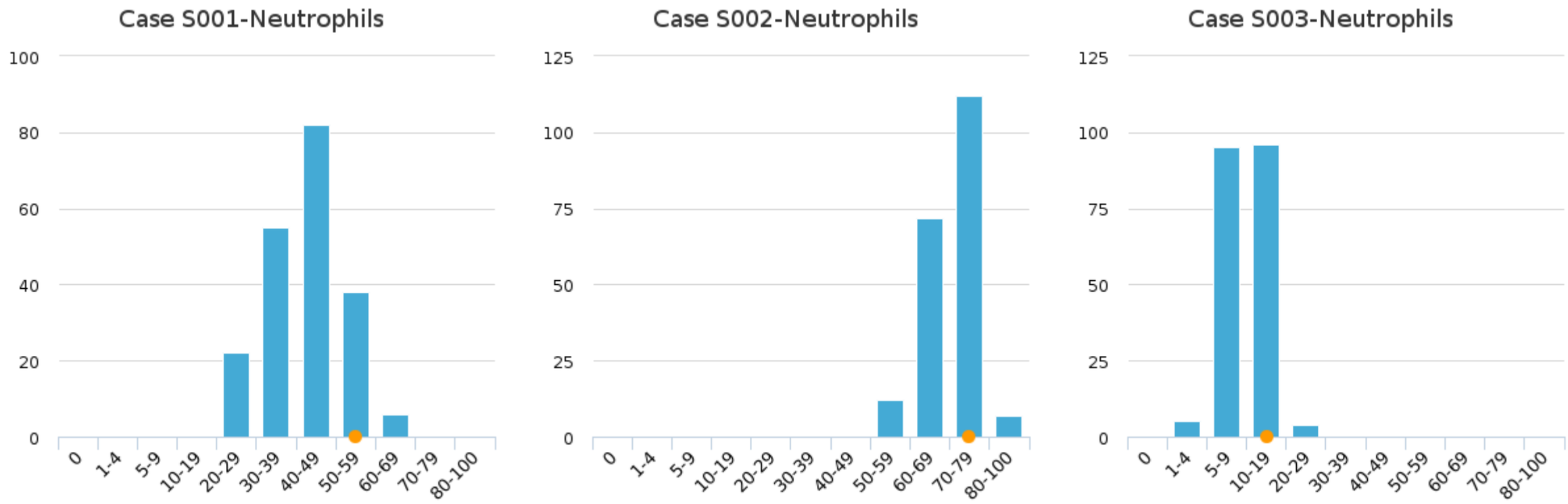
Metamyelocytes



Band forms |HEM



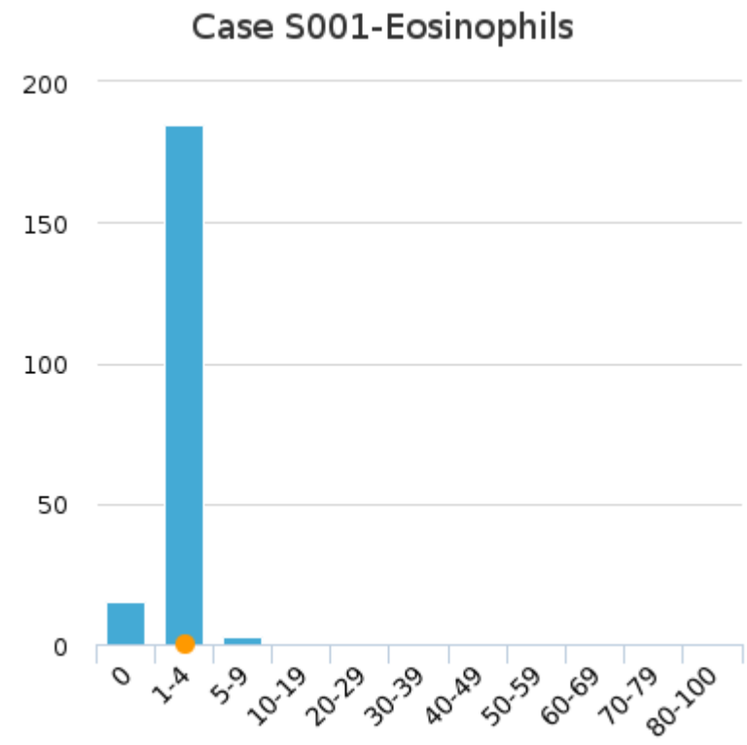
Neutrophils |HEM

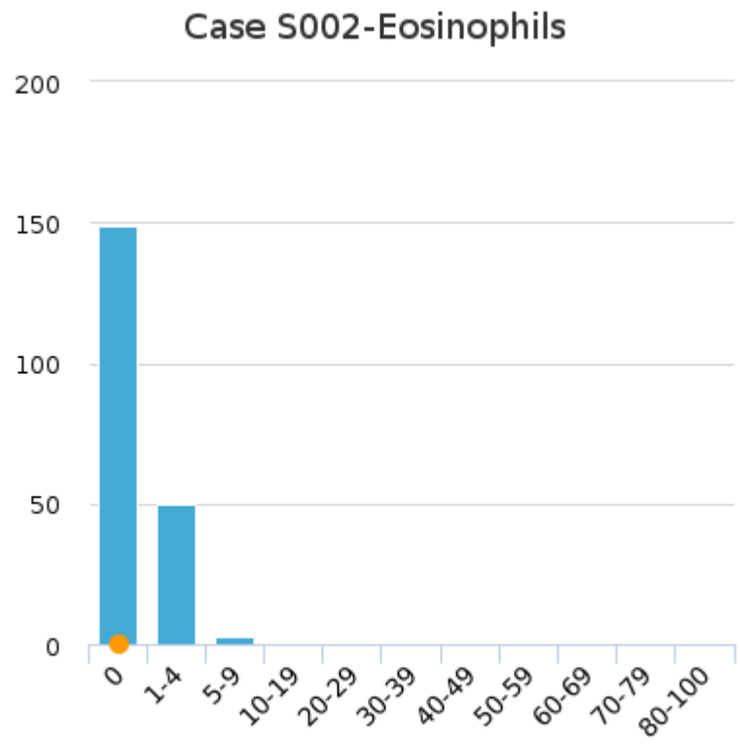


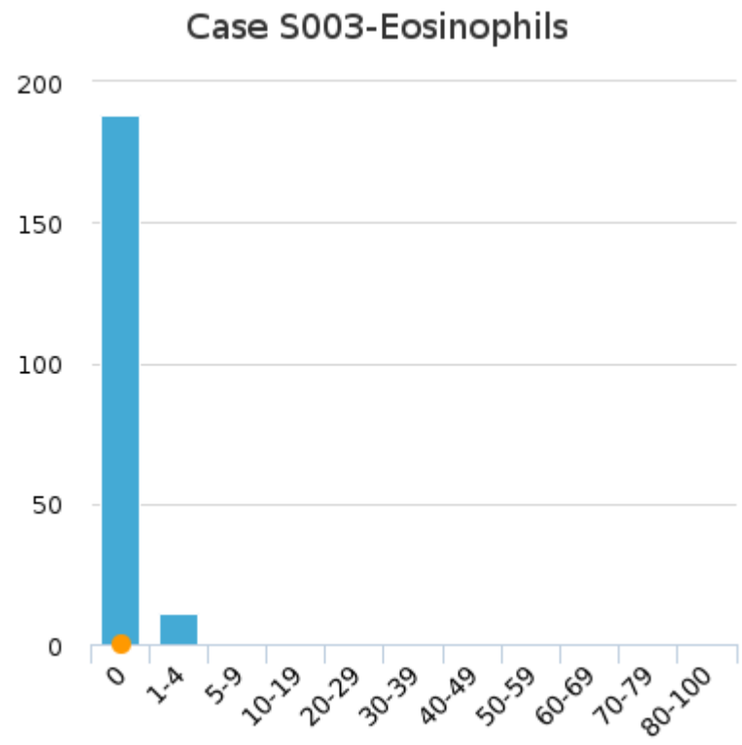
Leucocyte differential count and evaluation of blood cell morphology, virtual microscopy, May, 1-2023

Differential Count of White Blood Cells

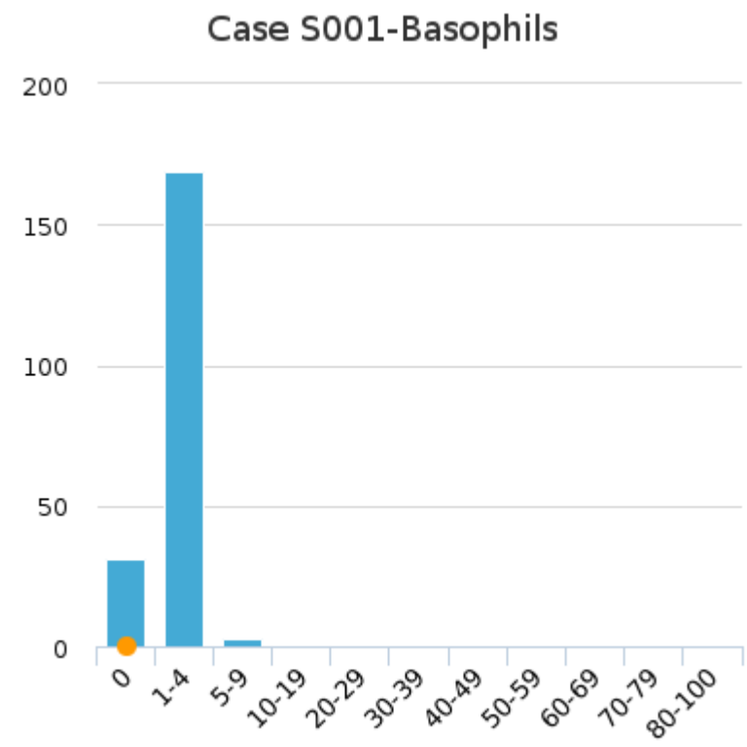
Eosinophils

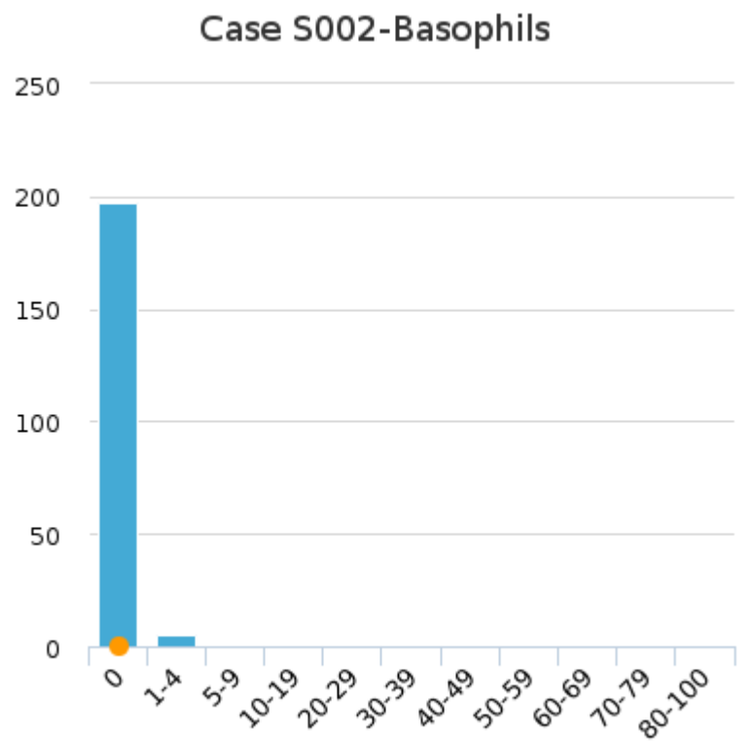


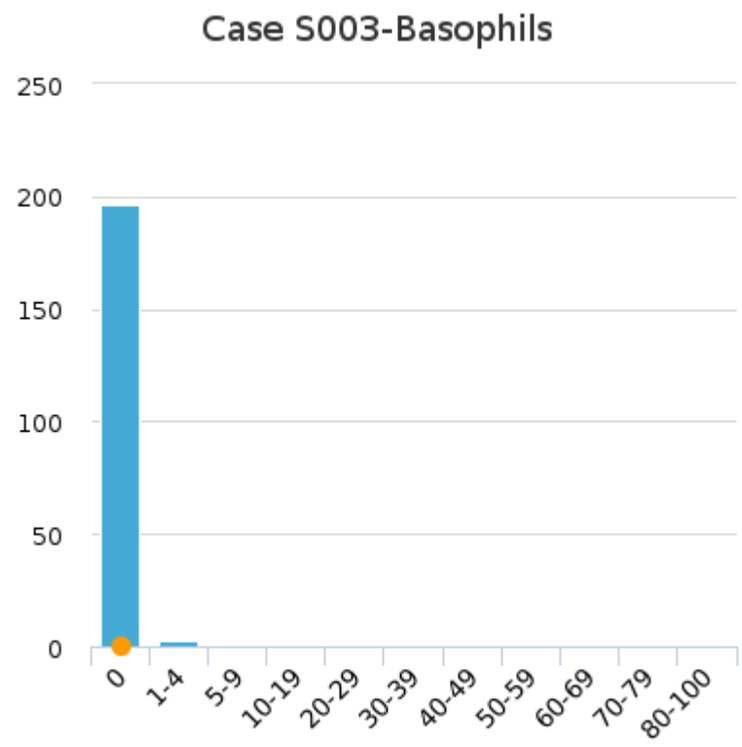




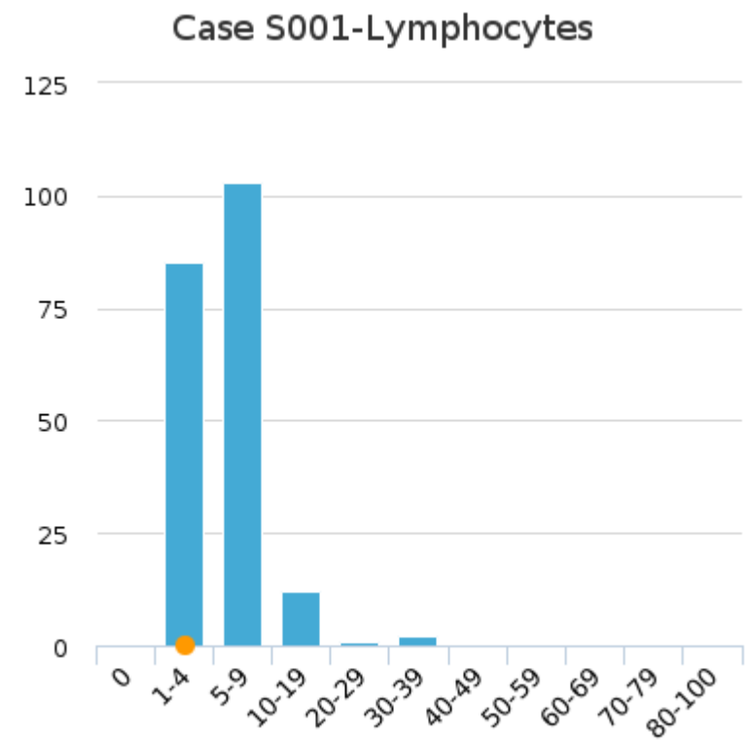
Basophils |HEM

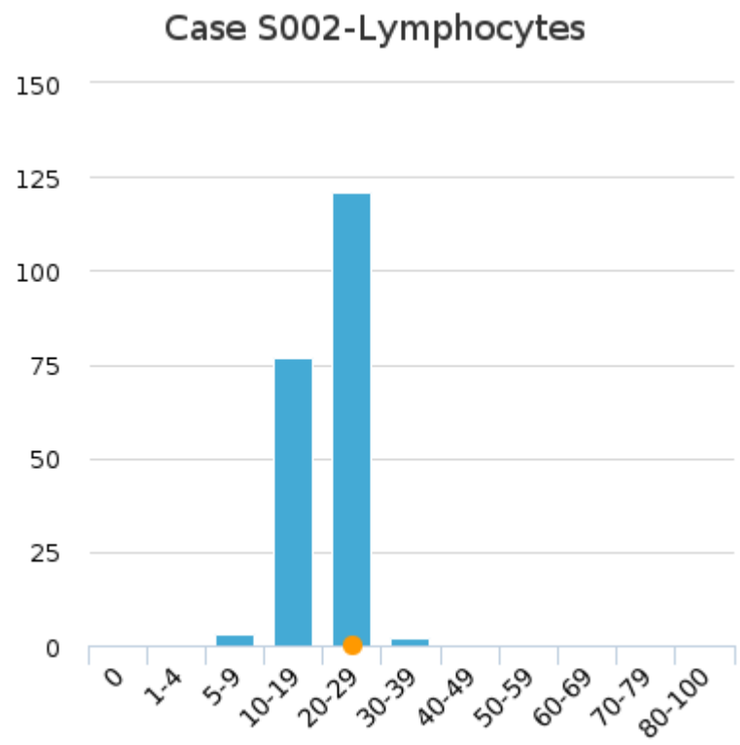


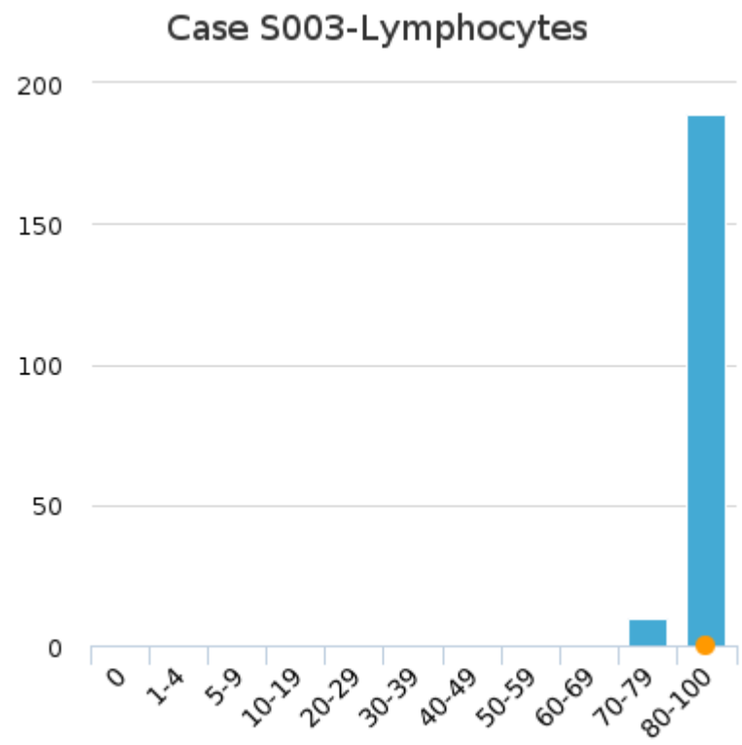




Lymphocytes |HEM

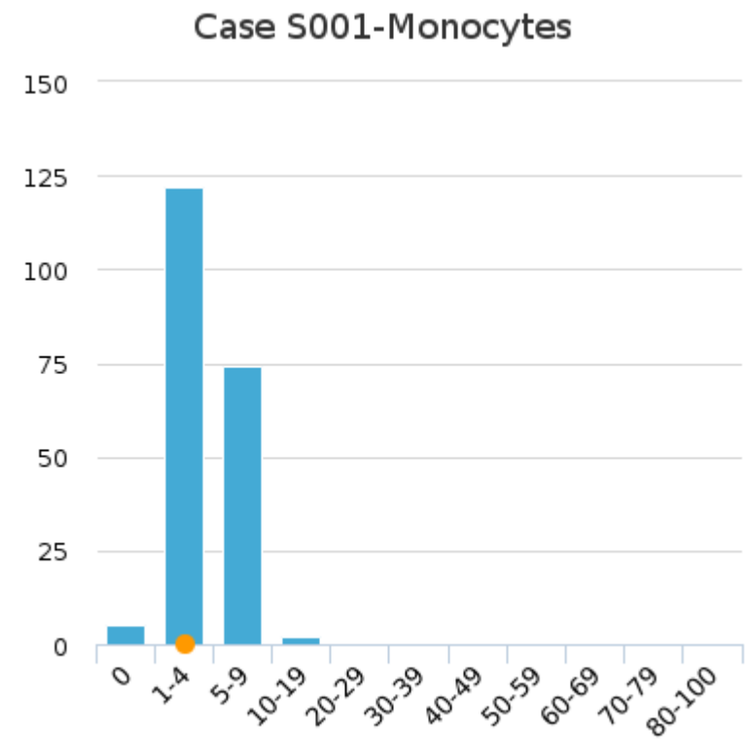


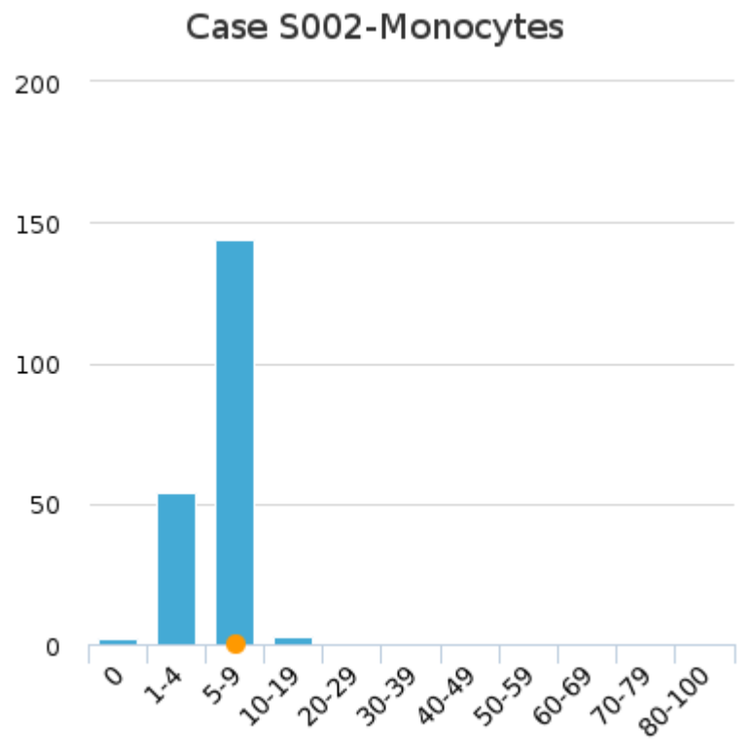


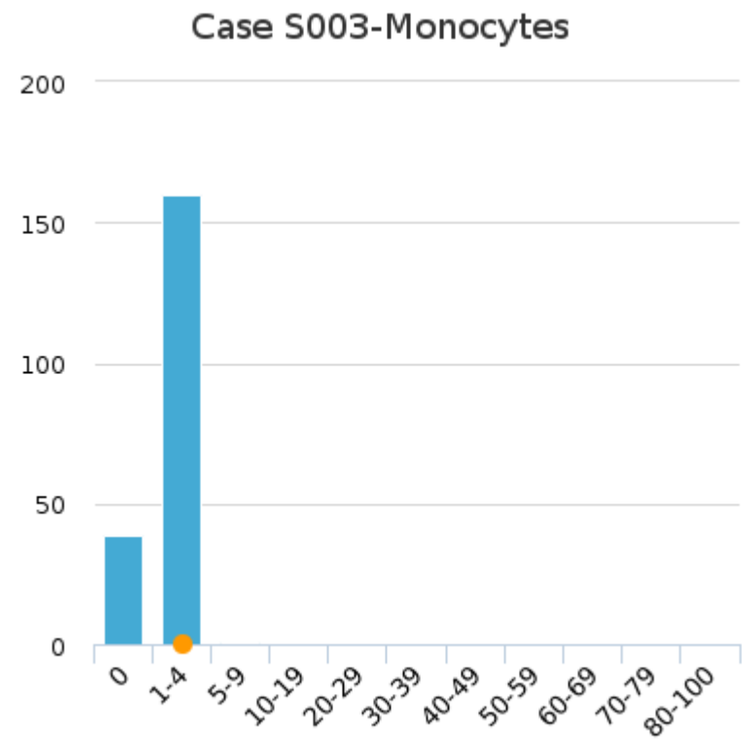


Differential Count of White Blood Cells

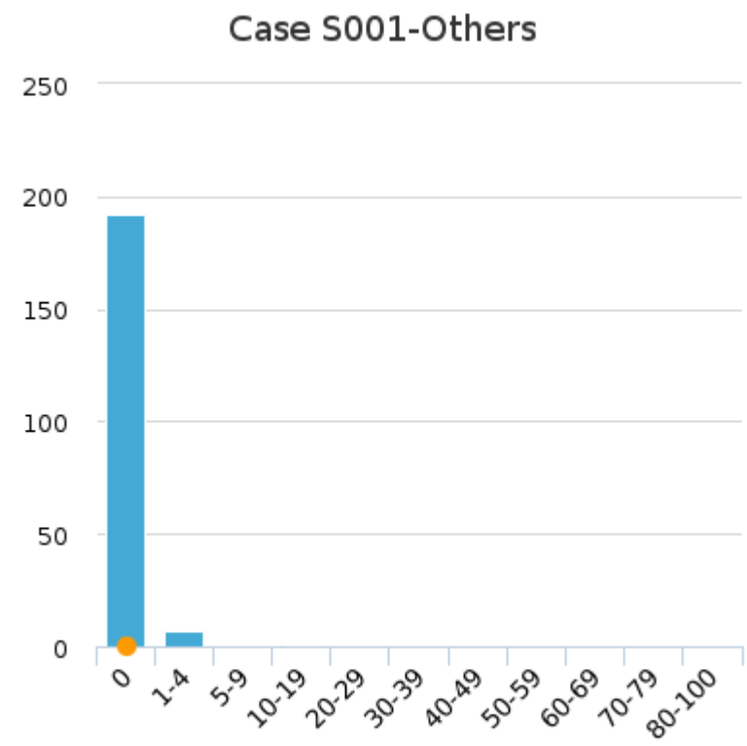
Monocytes

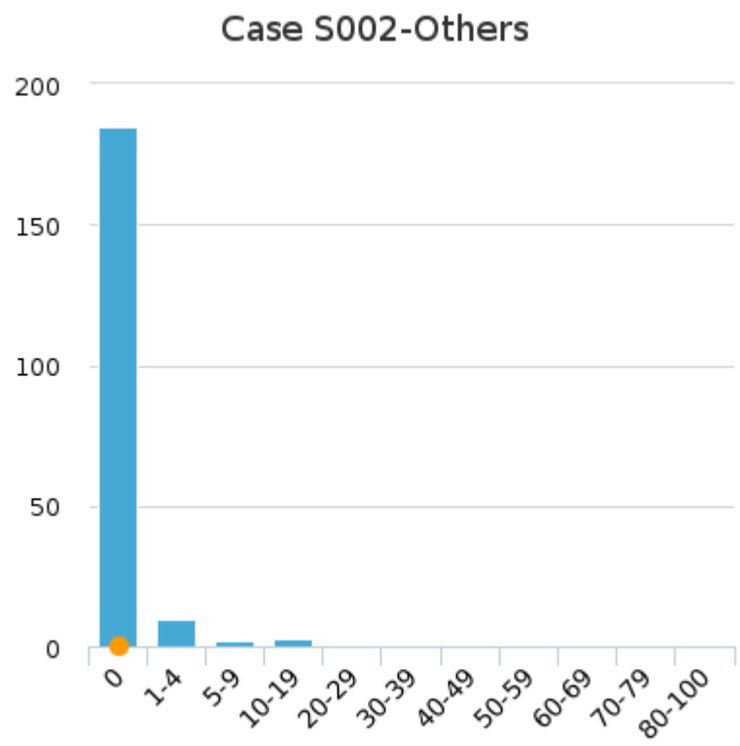


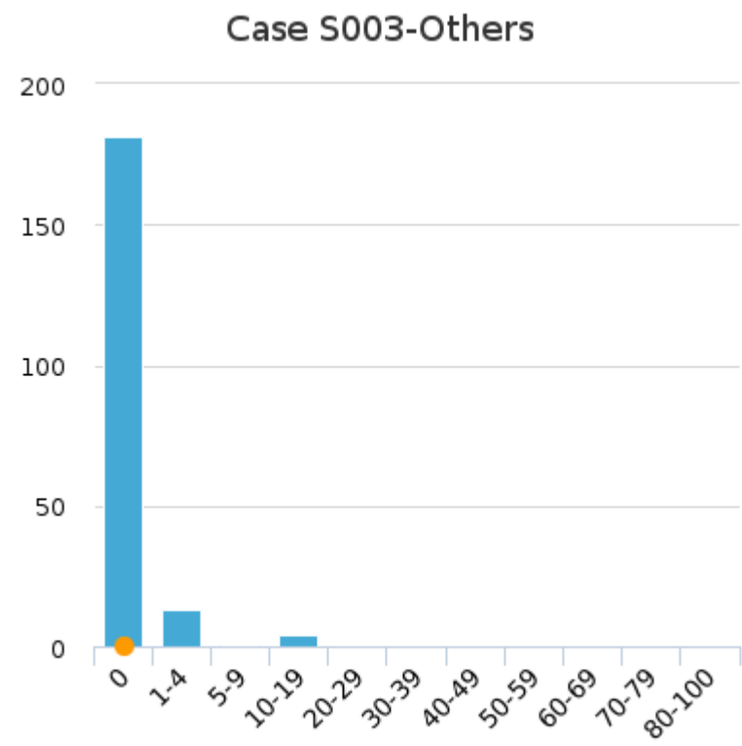




Others |HEM







LABQUALITY

External Quality Assessment Scheme

Leucocyte Differential Count and Evaluation of Blood Cell Morphology Round 1, 2023

Specimens
Samples S001 (LQ711923011), S002 (LQ711923012) and S003 (LQ711923013) were virtual images in LabScala.

Report info
The report includes findings, diagnoses, red cell indices, automated cell counts (WBC, PLT) and automated differential count, if possible.

In leucocyte differential count the percentages are shown in histograms, where laboratory's own result is marked with an orange dot. Separate histograms are produced for each cell type.

All evaluated results of blood cell morphology are shown in a table. Laboratory's own result is marked with a radio button and the green colour indicates the consensus of the expert and five out of six haematologists.

It is important to read the Final report first, because it contains important information of the samples and results in each round.

Comments – Expert
Sample S001
Red blood cells: Red blood cells normocytic and normochromic. Polychromatic cells can be seen, occasional erythroblasts.

White blood cells: Pronounced leukocytosis, especially neutrophilia, also eosinophilia and basophilia. In neutrophils, left shift up to individual blasts, cells at the myelocyte level are clearly pronounced. Monocytes and lymphocytes morphologically mature cells.

Thrombocytes: Normal amount and morphology.

Conclusions: Morphological finding suitable for chronic myeloid leukemia (CML). The diagnosis was confirmed during further examinations.

Differential cell counts: The analyzer did not give a reliable result. The differential counting of white blood cells has been performed microscopically.

Diagnosis: Chronic myeloid leukemia (CML).

Sample S002
Red blood cells: Red blood cells normocytic normochromic, no pronounced polychromasia, no erythroblasts.

White blood cells: Mild leukocytosis, mainly neutrophilia, marginal lymphocytosis. Neutrophils predominantly with a segmented nucleus, morphology within normal limits. Single myelocyte, no other juvenile forms, no blasts. Lymphocytes and monocytes morphologically mature cells.

Thrombocytes: Deep thrombocytopenia, no aggregates.

2023-06-22

FINAL REPORT

Product no. 4180

Subcontracting: Sample preparation, Digital image services

Samples sent	2023-05-15
Round closed	2023-06-06
Final report	2023-06-22

Request for correction
Typing errors in laboratory's result forms are on laboratory's responsibility. Labquality accepts responsibility only for result processing. Requests must be notified by writing within three weeks from the date of this letter.

Authorized by
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Expert
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Conclusions: Mild neutrophilia, deep thrombocytopenia. The findings are not suggestive of haematological malignancy.

Differential cell counts: Neutrophils 67% (10.1 x 10^9/l), Lymphocytes 26% (3.9 x 10^9/l), Monocytes 6% (0.9 x 10^9/l), Eosinophils 0.1%, Basophils 0.1%.

Diagnosis: Idiopathic thrombocytopenia (ITP). Mild neutrophilia is due to initiated corticosteroid therapy.

Sample S003

Red blood cells: Red blood cells macrocytic, pronounced anisocytosis, some spherocytes, occasional tear drop poikilocytes. Reticulocytosis, morphologically no erythroblasts.

White blood cells: Leukocytosis due to lymphocytosis, in addition, mild neutrophilia. Lymphocytes morphologically mature cells. Smear cells. Morphology of neutrophils and monocytes normal. No blasts.

Thrombocytes: Normal amount and morphology.

Conclusions: Lymphocytosis, suitable for previously diagnosed chronic lymphocytic leukemia (CLL). Red blood cell morphology and reticulocytosis indicate autoimmune hemolytic anemia**.**

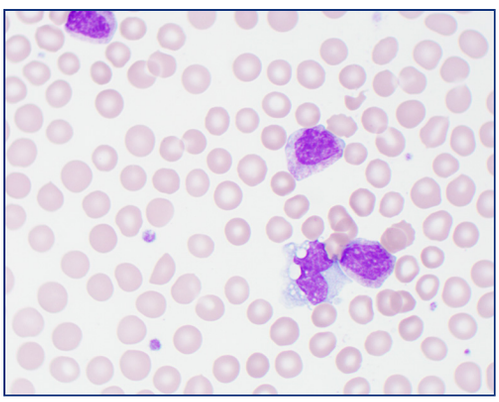
Differential cell counts: The analyzer did not give a reliable result. The differential counting of white blood cells has been performed microscopically.

Diagnosis: Chronic lymphocytic leukemia (CLL) and associated autoimmune hemolytic anemia (AIHA).

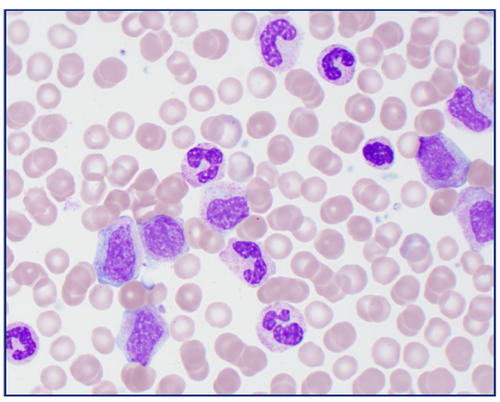
End of report

LABQUALITY

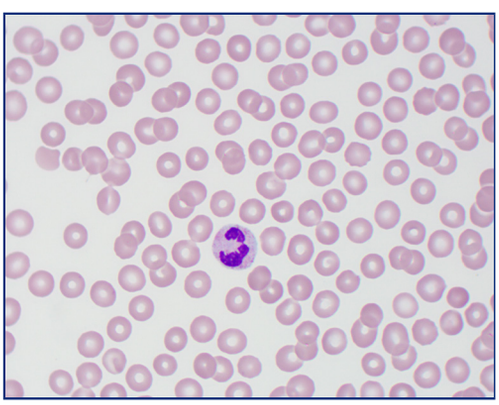
Blood cell morphology round, 1/2023



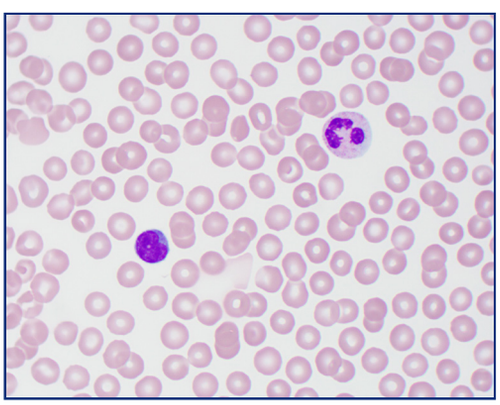
S001: Three myelocytes, one monocyte



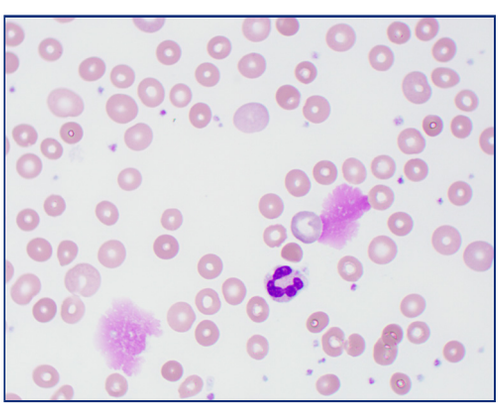
S001: Cells of the neutrophil series



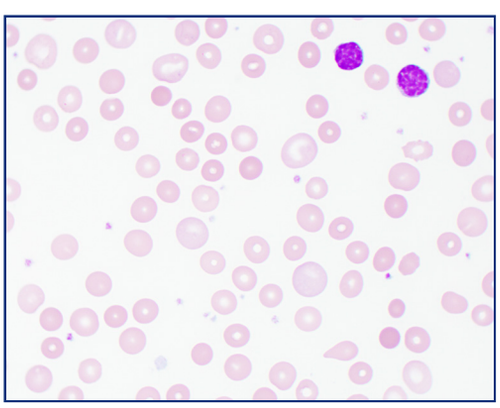
S002: A neutrophil, red blood cells, no platelets



S002: A neutrophil, a lymphocyte, red blood cells, no platelets



S003: A neutrophil, red blood cells, some of which are polychromatic cells, two smear cells



S003: Two small lymphocytes, red blood cells including some spherocytes and polychromatic