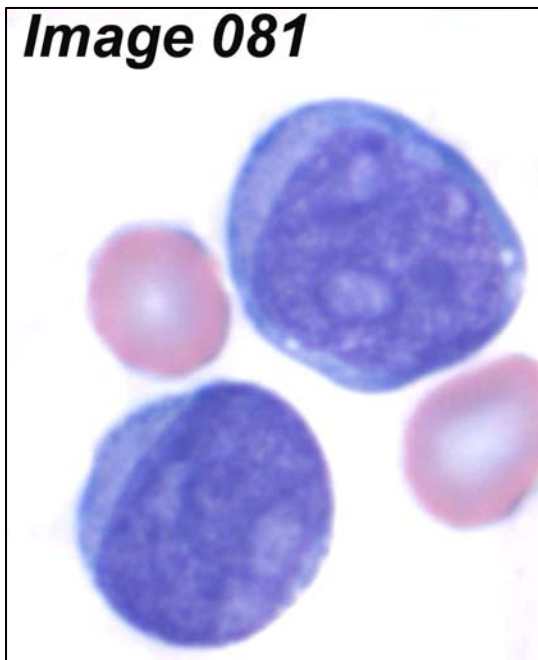


**NEW YORK STATE CYTOHEMATOLOGY PROFICIENCY TESTING PROGRAM**  
**Glass Slide Critique ~ November 2010**

<b>Slide 081</b>	<i>Diagnosis:</i> MDS to AML	
<i>Available data:</i> 72 year-old female	WBC	51.0 x 10 <sup>9</sup> /L
	RBC	3.39 x 10 <sup>12</sup> /L
	Hemoglobin	9.6 g/dL
	Hematocrit	29.1 %
	MCV	86.0 fL
	Platelet count	16 x 10 <sup>9</sup> /L



The significant finding in this case of Acute Myelogenous Leukemia (AML) was the presence of many blast forms. The participant median for blasts, all types was 88. The blast cells in this case (Image 081) are large, irregular in shape and contain large prominent nucleoli. It is difficult to identify a blast cell as a myeloblast without the presence of an Auer rod in the cytoplasm. Auer rods were reported by three participants.

Two systems are used to classify AML into subtypes, the French-American-British (FAB) and the World Health Organization (WHO). Most are familiar with the FAB classification. The WHO classification system takes into consideration prognostic factors in classifying AML. These factors include cytogenetic test results, patient's age, white blood cell count, pre-existing blood disorders and a history of treatment with chemotherapy and/or radiation therapy for a prior cancer.

The platelet count in this case was 16,000. Reduced number of platelets was correctly reported by 346 (94%) of participants.

Approximately eight percent of participants commented that the red blood cells in this case were difficult to evaluate due to the presence of a bluish hue around the red blood cells. Comments received included, "On slide 081 the morphology was difficult to evaluate since there was a large amount of protein surrounding RBC's", "Slide 081 unable to distinguish red cell morphology due to protein" and "Unable to adequately assess morphology on slide 081 due to poor stain". Cell staining varies from case to case depending on the pathologic condition and the staining process. If the quality of a smear does not meet your laboratory standard, good laboratory practice would indicate preparation of a new smear and/or adjustment to the staining process. If the change does not resolve the issue, it would be appropriate to comment on the inability to assess red cell morphology as did 28 participants in this event. Participant results for red blood cell morphology are included in the report but these were not evaluated.

Slide: 081

Cell Classification or Finding	Expected Range	Participant Median	Participant Range
Blast cell not classified	0 - 96	88	0 - 96
Myeloblast/Promyelocyte	0 - 0	0	0 - 0
Lymphoblast/Prolymphocyte	0 - 85	0	0 - 87
Monoblast/Promonocyte	0 - 0	0	0 - 0
Erythroblast	0 - 0	0	0 - 0
*[Blasts, all types]	43 - 96	88	20 - 96
Lymphoma/Sezary cell	0 - 0	0	0 - 0
Hairy cell	0 - 0	0	0 - 0
Myelocyte	0 - 0	0	0 - 0
Metamyelocyte	0 - 0	0	0 - 0
Band neutrophil	0 - 1	0	0 - 1
Segmented neutrophil	0 - 8	4	0 - 8
*[Total neutrophils]	0 - 8	4	0 - 9
Eosinophil	0 - 0	0	0 - 1
Basophil	0 - 1	0	0 - 1
Lymphocyte	0 - 26	4	0 - 28
Atypical lymphocyte	0 - 4	0	0 - 5
Monocyte	0 - 7	2	0 - 7
Plasma cell	0 - 0	0	0 - 0
NRBC / 100 WBC	0 - 1	0	0 - 1

Cell Classification or Finding	Expected Result	Participant Results			
Anisocytosis	None	None ( 28%)	Slight ( 63%)	Moderate (9%)	MarKed ( 0%)
Poikilocytosis	None	None ( 59%)	Slight ( 38%)	Moderate (3%)	MarKed ( 0%)
Macrocytosis	None	None ( 88%)	Slight ( 11%)	Moderate (1%)	MarKed ( 0%)
Microcytosis	None	None ( 76%)	Slight ( 22%)	Moderate (2%)	MarKed ( 0%)
Hypochromia	None	None ( 57%)	Slight ( 32%)	Moderate (9%)	MarKed ( 1%)
Polychromasia	None	None ( 89%)	Slight ( 11%)	Moderate (0%)	MarKed ( 0%)
Reduced number of platelets	Present	Absent( 6%)		Present( 94%)	
Increased number of platelets	Absent	Absent(100%)		Present( 0%)	
Phagocytosis of platelet(s)	Absent	Absent(100%)		Present( 0%)	
Bizarre or irregular platelets	Absent	Absent( 99%)		Present( 1%)	
Clumped platelets	Absent	Absent( 97%)		Present( 3%)	
Giant platelets	Absent	Absent( 97%)		Present( 3%)	
Platelet satellitosis	Absent	Absent(100%)		Present( 0%)	
Auer rods	Absent	Absent( 99%)		Present( 1%)	
Dohle bodies	Absent	Absent(100%)		Present( 0%)	
Hypersegmentation	Absent	Absent( 99%)		Present( 1%)	
Pelger Huet anomaly	Absent	Absent(100%)		Present( 0%)	
Smudge / Basket cells	Absent	Absent( 58%)		Present( 42%)	
Toxic granulation	Absent	Absent( 99%)		Present( 1%)	
Acanthocytes	Absent	Absent( 98%)		Present( 2%)	
Basophilic stippling	Absent	Absent( 96%)		Present( 4%)	
Blister cells (pre keratocytes)	Absent	Absent(100%)		Present( 0%)	
Cabot rings	Absent	Absent(100%)		Present( 0%)	
Echinocytes (crenated/burr cells)	Absent	Absent( 79%)		Present( 21%)	
Elliptocytes (ovalocytes)	Absent	Absent( 83%)		Present( 17%)	
Howell-Jolly bodies	Absent	Absent(100%)		Present( 0%)	
Pappenheimer bodies	Absent	Absent(100%)		Present( 0%)	
Red cell agglutinates	Absent	Absent(100%)		Present( 0%)	
Rouleaux	Absent	Absent( 96%)		Present( 4%)	
Schistocytes	Absent	Absent( 90%)		Present( 10%)	
Schuffner's granules	Absent	Absent(100%)		Present( 0%)	
Sickle cells (drepanocytes)	Absent	Absent(100%)		Present( 0%)	
Spherocytes	Absent	Absent( 96%)		Present( 4%)	
Stomatocytes	Absent	Absent(100%)		Present( 0%)	
Target cells (codocytes)	Absent	Absent(100%)		Present( 0%)	
Tear drop cells (dacrocytes)	Absent	Absent( 99%)		Present( 1%)	
Bacteria	Absent	Absent(100%)		Present( 0%)	
Fungi/yeast	Absent	Absent(100%)		Present( 0%)	
Malaria/Babesiosis	Absent	Absent(100%)		Present( 0%)	
Stain precipitate	Absent	Absent( 97%)		Present( 3%)	
Phagocytosis of red cell(s)	Absent	Absent(100%)		Present( 0%)	

\* Obtained by combining individual results

**NEW YORK STATE CYTOHEMATOLOGY PROFICIENCY TESTING PROGRAM**  
**Glass Slide Critique ~ November 2010**

<b>Slide 082</b>	<i>Diagnosis:</i> Asymptomatic	
<i>Available data:</i> 46 year-old female	WBC	7.1 x 10 <sup>9</sup> /L
	RBC	4.56 x 10 <sup>12</sup> /L
	Hemoglobin	13.5 g/dL
	Hematocrit	40.1 %
	MCV	88.0 fL
	Platelet count	267 x 10 <sup>9</sup> /L

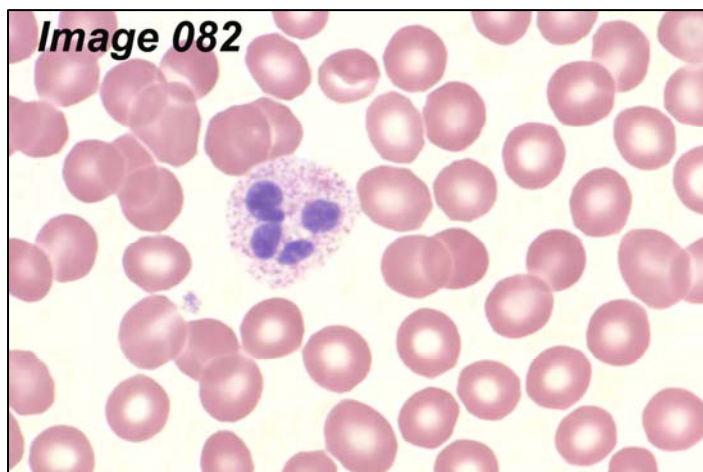


Image 082 was taken from a case of an asymptomatic female, the hematologic findings are unremarkable. The red blood cells are normochromic and normocytic. Although there are no abnormal white blood cells present in this case, three participants reported the presence of plasma cells and appropriately received an evaluation of "Unacceptable".

## Slide: 082

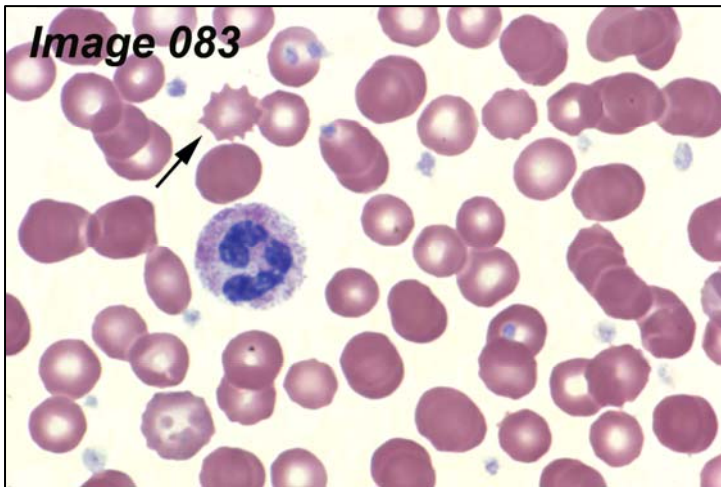
Cell Classification or Finding	Expected Range	Participant Median	Participant Range
Blast cell not classified	0 - 0	0	0 - 0
Myeloblast/Promyelocyte	0 - 0	0	0 - 0
Lymphoblast/Prolymphocyte	0 - 0	0	0 - 0
Monoblast/Promonocyte	0 - 0	0	0 - 0
Erythroblast	0 - 0	0	0 - 0
Lymphoma/Sezary cell	0 - 0	0	0 - 0
Hairy cell	0 - 0	0	0 - 0
Myelocyte	0 - 0	0	0 - 0
Metamyelocyte	0 - 0	0	0 - 0
Band neutrophil	0 - 5	1	0 - 5
Segmented neutrophil	54 - 71	63	52 - 72
*[Total neutrophils]	55 - 71	64	54 - 72
Eosinophil	0 - 6	3	0 - 7
Basophil	0 - 1	0	0 - 2
Lymphocyte	18 - 35	26	17 - 36
Atypical lymphocyte	0 - 6	0	0 - 9
Monocyte	1 - 8	5	1 - 8
Plasma cell	0 - 0	0	0 - 0
NRBC / 100 WBC	0 - 0	0	0 - 0

Cell Classification or Finding	Expected Result	Participant Results			
Anisocytosis	None	None ( 87%)	Slight ( 13%)	Moderate (0%)	MarKed ( 0%)
Poikilocytosis	None	None ( 95%)	Slight ( 5%)	Moderate (0%)	MarKed ( 0%)
Macrocytosis	None	None ( 94%)	Slight ( 6%)	Moderate (1%)	MarKed ( 0%)
Microcytosis	None	None ( 98%)	Slight ( 2%)	Moderate (0%)	MarKed ( 0%)
Hypochromia	None	None ( 97%)	Slight ( 3%)	Moderate (0%)	MarKed ( 0%)
Polychromasia	None	None ( 98%)	Slight ( 2%)	Moderate (0%)	MarKed ( 0%)
Reduced number of platelets	Absent	Absent( 96%)		Present( 4%)	
Increased number of platelets	Absent	Absent( 99%)		Present( 1%)	
Phagocytosis of platelet(s)	Absent	Absent(100%)		Present( 0%)	
Bizarre or irregular platelets	Absent	Absent(100%)		Present( 0%)	
Clumped platelets	Absent	Absent( 99%)		Present( 1%)	
Giant platelets	Absent	Absent( 93%)		Present( 7%)	
Platelet satellitosis	Absent	Absent(100%)		Present( 0%)	
Auer rods	Absent	Absent(100%)		Present( 0%)	
Dohle bodies	Absent	Absent(100%)		Present( 0%)	
Hypersegmentation	Absent	Absent( 98%)		Present( 2%)	
Pelger Huet anomaly	Absent	Absent(100%)		Present( 0%)	
Smudge / Basket cells	Absent	Absent( 99%)		Present( 1%)	
Toxic granulation	Absent	Absent( 96%)		Present( 4%)	
Acanthocytes	Absent	Absent(100%)		Present( 0%)	
Basophilic stippling	Absent	Absent( 99%)		Present( 1%)	
Blister cells (pre keratocytes)	Absent	Absent(100%)		Present( 0%)	
Cabot rings	Absent	Absent(100%)		Present( 0%)	
Echinocytes (crenated/burr cells)	Absent	Absent( 99%)		Present( 1%)	
Elliptocytes (ovalocytes)	Absent	Absent( 93%)		Present( 7%)	
Howell-Jolly bodies	Absent	Absent( 99%)		Present( 1%)	
Pappenheimer bodies	Absent	Absent(100%)		Present( 0%)	
Red cell agglutinates	Absent	Absent(100%)		Present( 0%)	
Rouleaux	Absent	Absent( 98%)		Present( 2%)	
Schistocytes	Absent	Absent(100%)		Present( 0%)	
Schuffner's granules	Absent	Absent(100%)		Present( 0%)	
Sickle cells (drepanocytes)	Absent	Absent(100%)		Present( 0%)	
Spherocytes	Absent	Absent( 98%)		Present( 2%)	
Stomatocytes	Absent	Absent(100%)		Present( 0%)	
Target cells (codocytes)	Absent	Absent(100%)		Present( 0%)	
Tear drop cells (dacrocytes)	Absent	Absent(100%)		Present( 0%)	
Bacteria	Absent	Absent(100%)		Present( 0%)	
Fungi/yeast	Absent	Absent(100%)		Present( 0%)	
Malaria/Babesiosis	Absent	Absent(100%)		Present( 0%)	
Stain precipitate	Absent	Absent(100%)		Present( 0%)	
Phagocytosis of red cell(s)	Absent	Absent(100%)		Present( 0%)	

\* Obtained by combining individual results

**NEW YORK STATE CYTOHEMATOLOGY PROFICIENCY TESTING PROGRAM**  
**Glass Slide Critique ~ November 2010**

<b>Slide 083</b>	<i>Diagnosis:</i> Aortic Disease	
<i>Available data:</i> 49 year-old male	WBC	$25.6 \times 10^9 /L$
	RBC	$3.43 \times 10^{12} /L$
	Hemoglobin	10.0 g/dL
	Hematocrit	30.7 %
	MCV	89.5 fL
	Platelet count	$339 \times 10^9 /L$



The white blood cell count in this case was slightly elevated ( $25.6 \times 10^9 /L$ ) and few immature forms were present; myelocytes (participant median=3), metamyelocytes (participant median=5) and band forms (participant median=11).

Echinocytes (Image 083), giant platelets and basophilic stippling were reported present by approximately half of the participants. The lack of consensus for these findings may be attributed to laboratory-specific reporting protocol.

Slide: 083

Cell Classification or Finding	Expected Range	Participant Median	Participant Range
Blast cell not classified	0 - 0	0	0 - 0
Myeloblast/Promyelocyte	0 - 1	0	0 - 2
Lymphoblast/Prolymphocyte	0 - 0	0	0 - 0
Monoblast/Promonocyte	0 - 0	0	0 - 0
Erythroblast	0 - 0	0	0 - 0
*[Myleblasts+Blasts not classified]	0 - 2	0	0 - 2
Lymphoma/Sezary cell	0 - 0	0	0 - 0
Hairy cell	0 - 0	0	0 - 0
Myelocyte	0 - 7	3	0 - 8
Metamyelocyte	0 - 10	5	0 - 10
Band neutrophil	3 - 25	11	2 - 28
Segmented neutrophil	50 - 78	66	49 - 78
*[Total neutrophils]	69 - 85	79	67 - 86
Eosinophil	0 - 2	0	0 - 2
Basophil	0 - 0	0	0 - 0
Lymphocyte	3 - 14	8	3 - 15
Atypical lymphocyte	0 - 2	0	0 - 2
Monocyte	0 - 8	4	0 - 9
Plasma cell	0 - 0	0	0 - 0
NRBC / 100 WBC	0 - 2	1	0 - 2

Cell Classification or Finding	Expected Result	Participant Results			
Anisocytosis	Slight	None ( 26%)	Slight ( 54%)	Moderate (19%)	MarKed ( 1%)
Poikilocytosis	None	None ( 56%)	Slight ( 37%)	Moderate ( 7%)	MarKed ( 0%)
Macrocytosis	None	None ( 57%)	Slight ( 36%)	Moderate ( 7%)	MarKed ( 0%)
Microcytosis	None	None ( 81%)	Slight ( 14%)	Moderate ( 5%)	MarKed ( 0%)
Hypochromia	None	None ( 66%)	Slight ( 31%)	Moderate ( 3%)	MarKed ( 0%)
Polychromasia	Slight	None ( 7%)	Slight ( 65%)	Moderate (27%)	MarKed ( 0%)
Reduced number of platelets	Absent	Absent( 99%)		Present( 1%)	
Increased number of platelets	Absent	Absent( 79%)		Present( 21%)	
Phagocytosis of platelet(s)	Absent	Absent(100%)		Present( 0%)	
Bizarre or irregular platelets	Absent	Absent( 96%)		Present( 4%)	
Clumped platelets	Absent	Absent( 86%)		Present( 14%)	
Giant platelets	Absent	Absent( 60%)		Present( 40%)	
Platelet satellitosis	Absent	Absent(100%)		Present( 0%)	
Auer rods	Absent	Absent(100%)		Present( 0%)	
Dohle bodies	Absent	Absent( 98%)		Present( 2%)	
Hypersegmentation	Absent	Absent( 94%)		Present( 6%)	
Pelger Huet anomaly	Absent	Absent( 99%)		Present( 1%)	
Smudge / Basket cells	Absent	Absent( 83%)		Present( 17%)	
Toxic granulation	Absent	Absent( 85%)		Present( 15%)	
Acanthocytes	Absent	Absent( 95%)		Present( 5%)	
Basophilic stippling	Absent	Absent( 52%)		Present( 48%)	
Blister cells (pre keratocytes)	Absent	Absent(100%)		Present( 0%)	
Cabot rings	Absent	Absent(100%)		Present( 0%)	
Echinocytes (crenated/burr cells)	Absent	Absent( 51%)		Present( 49%)	
Elliptocytes (ovalocytes)	Absent	Absent( 96%)		Present( 4%)	
Howell-Jolly bodies	Absent	Absent( 98%)		Present( 2%)	
Pappenheimer bodies	Absent	Absent(100%)		Present( 0%)	
Red cell agglutinates	Absent	Absent(100%)		Present( 0%)	
Rouleaux	Absent	Absent( 92%)		Present( 8%)	
Schistocytes	Absent	Absent( 87%)		Present( 13%)	
Schuffner's granules	Absent	Absent(100%)		Present( 0%)	
Sickle cells (drepanocytes)	Absent	Absent(100%)		Present( 0%)	
Spherocytes	Absent	Absent( 94%)		Present( 6%)	
Stomatocytes	Absent	Absent( 99%)		Present( 1%)	
Target cells (codocytes)	Absent	Absent( 97%)		Present( 3%)	
Tear drop cells (dacrocytes)	Absent	Absent( 96%)		Present( 4%)	
Bacteria	Absent	Absent(100%)		Present( 0%)	
Fungi/yeast	Absent	Absent(100%)		Present( 0%)	
Malaria/Babesiosis	Absent	Absent(100%)		Present( 0%)	
Stain precipitate	Absent	Absent( 99%)		Present( 1%)	
Phagocytosis of red cell(s)	Absent	Absent(100%)		Present( 0%)	

\* Obtained by combining individual results

**NEW YORK STATE CYTOHEMATOLOGY PROFICIENCY TESTING PROGRAM**  
**Glass Slide Critique ~ November 2010**

<b>Slide 084</b>	<i>Diagnosis: Aplastic Anemia</i>	
<i>Available data:</i> 84 year-old male	WBC	2.3 x 10 <sup>9</sup> /L
	RBC	3.23 x 10 <sup>12</sup> /L
	Hemoglobin	9.7 g/dL
	Hematocrit	27.5. %
	MCV	85.2 fL
	Platelet count	23 x 10 <sup>9</sup> /L



The significant findings in this case of Aplastic Anemia were decreased number of white blood cells and thrombocytes. A reduced number of platelets was reported by 94% of participants. Elliptocytes, schistocytes and tear drop cells were observed.

“Most aplastic anemias (hypoplastic or aregenerative anemias) are caused by attrition or malfunction of the pluripotential stem cell known by the acronym CFU-GEMM. As the result of a shortage of these ‘myeloid’ (marrow) stem cells, the marrow cavity is underpopulated with progeny of all three nonlymphoid hematopoietic cell lines: erythroblasts, granulocytes plus monocytes, and megakaryocytes (‘trilineage aplasia’).

The reduced total population of hematopoietic cells leads to pancytopenia, but the reduction in numbers of various blood cell types may be quite uneven”. Jandle, J.H. Blood: Textbook of Hematology 2<sup>nd</sup> Ed. Boston: Little, Brown and Company, 1996, p.201

Slide: 084

Cell Classification or Finding	Expected Range	Participant Median	Participant Range
Blast cell not classified	0 - 6	0	0 - 6
Myeloblast/Promyelocyte	0 - 0	0	0 - 0
Lymphoblast/Prolymphocyte	0 - 0	0	0 - 1
Monoblast/Promonocyte	0 - 0	0	0 - 0
Erythroblast	0 - 0	0	0 - 0
*[Blasts, all types]	0 - 6	0	0 - 7
Lymphoma/Sezary cell	0 - 0	0	0 - 0
Hairy cell	0 - 0	0	0 - 0
Myelocyte	0 - 1	0	0 - 2
Metamyelocyte	0 - 2	0	0 - 2
Band neutrophil	0 - 11	3	0 - 12
Segmented neutrophil	18 - 36	27	15 - 36
*[Total neutrophils]	23 - 40	31	22 - 41
Eosinophil	0 - 4	2	0 - 5
Basophil	0 - 1	0	0 - 1
Lymphocyte	45 - 70	59	43 - 71
Atypical lymphocyte	0 - 12	3	0 - 12
Monocyte	0 - 7	2	0 - 8
Plasma cell	0 - 0	0	0 - 0
NRBC / 100 WBC	0 - 2	0	0 - 2

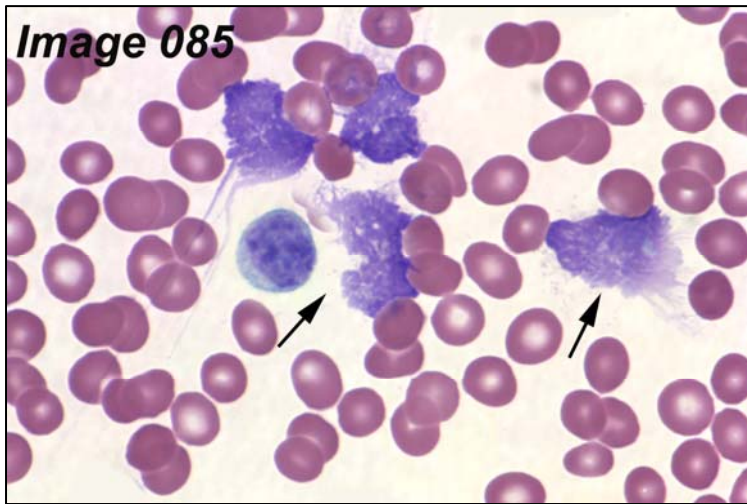
Cell Classification or Finding	Expected Result	Participant Results			
Anisocytosis	Slight	None ( 14%)	Slight ( 60%)	Moderate (25%)	Marked ( 1%)
Poikilocytosis	Slight	None ( 28%)	Slight ( 60%)	Moderate (13%)	Marked ( 0%)
Macrocytosis	None	None ( 68%)	Slight ( 28%)	Moderate ( 5%)	Marked ( 0%)
Microcytosis	None	None ( 49%)	Slight ( 40%)	Moderate (10%)	Marked ( 0%)
Hypochromia	None	None ( 50%)	Slight ( 40%)	Moderate (10%)	Marked ( 0%)
Polychromasia	None	None ( 77%)	Slight ( 23%)	Moderate ( 0%)	Marked ( 0%)
Reduced number of platelets	Present	Absent( 6%)			Present( 94%)
Increased number of platelets	Absent	Absent(100%)			Present( 0%)
Phagocytosis of platelet(s)	Absent	Absent(100%)			Present( 0%)
Bizarre or irregular platelets	Absent	Absent( 99%)			Present( 1%)
Clumped platelets	Absent	Absent(100%)			Present( 0%)
Giant platelets	Absent	Absent( 86%)			Present( 14%)
Platelet satellitosis	Absent	Absent(100%)			Present( 0%)
Auer rods	Absent	Absent(100%)			Present( 0%)
Dohle bodies	Absent	Absent( 97%)			Present( 3%)
Hypersegmentation	Absent	Absent(100%)			Present( 0%)
Pelger Huet anomaly	Absent	Absent( 98%)			Present( 2%)
Smudge / Basket cells	Absent	Absent( 93%)			Present( 7%)
Toxic granulation	Absent	Absent( 94%)			Present( 6%)
Acanthocytes	Absent	Absent( 97%)			Present( 3%)
Basophilic stippling	Absent	Absent( 92%)			Present( 8%)
Blister cells (pre keratocytes)	Absent	Absent( 98%)			Present( 2%)
Cabot rings	Absent	Absent(100%)			Present( 0%)
Echinocytes (crenated/burr cells)	Absent	Absent( 97%)			Present( 3%)
Elliptocytes (ovalocytes)	Present	Absent( 42%)			Present( 58%)
Howell-Jolly bodies	Absent	Absent(100%)			Present( 0%)
Pappenheimer bodies	Absent	Absent(100%)			Present( 0%)
Red cell agglutinates	Absent	Absent( 99%)			Present( 1%)
Rouleaux	Absent	Absent( 82%)			Present( 18%)
Schistocytes	Absent	Absent( 55%)			Present( 45%)
Schuffner's granules	Absent	Absent(100%)			Present( 0%)
Sickle cells (drepanocytes)	Absent	Absent(100%)			Present( 0%)
Spherocytes	Absent	Absent( 89%)			Present( 11%)
Stomatocytes	Absent	Absent(100%)			Present( 0%)
Target cells (codocytes)	Absent	Absent( 98%)			Present( 2%)
Tear drop cells (dacryocytes)	Absent	Absent( 54%)			Present( 46%)
Bacteria	Absent	Absent(100%)			Present( 0%)
Fungi/yeast	Absent	Absent(100%)			Present( 0%)
Malaria/Babesiosis	Absent	Absent(100%)			Present( 0%)
Stain precipitate	Absent	Absent( 99%)			Present( 1%)
Phagocytosis of red cell(s)	Absent	Absent(100%)			Present( 0%)

\* Obtained by combining individual results



**NEW YORK STATE CYTOHEMATOLOGY PROFICIENCY TESTING PROGRAM**  
**Glass Slide Critique ~ November 2010**

<b>Slide 085</b>	<i>Diagnosis:</i> CLL	
<i>Available data:</i> 57 year-old male	WBC	62.5 x 10 <sup>9</sup> /L
	RBC	3.24 x 10 <sup>12</sup> /L
	Hemoglobin	10.5 g/dL
	Hematocrit	31.0 %
	MCV	95.7 fL
	Platelet count	106 x 10 <sup>9</sup> /L



The significant finding in this case of Chronic Lymphocytic Leukemia (CLL) was the high percentage of mature lymphocytes (participant median =90).

Smudge/Basket cells (Image 085) are abundant and were correctly reported by 99% of participants. Those participants who did not report the presence of smudge/basket cells received a comment that they should review the case.

The Clinical and Laboratory Standards Institute (CLSI) document H20-A2 protocol for examining blood films states that, "Except for certain forms associated with pathological states (e.g., chronic lymphocytic leukemia), less than 2% of the WBC

should be disrupted or unidentifiable forms". The addition of albumin to the blood sample will decrease the fragility of the lymphocytes and decrease the formation of smudge cells.

Slide: 085

Cell Classification or Finding	Expected Range	Participant Median	Participant Range
Blast cell not classified	0 - 2	0	0 - 4
Myeloblast/Promyelocyte	0 - 0	0	0 - 0
Lymphoblast/Prolymphocyte	0 - 2	0	0 - 14
Monoblast/Promonocyte	0 - 0	0	0 - 0
Erythroblast	0 - 0	0	0 - 0
Lymphoma/Sezary cell	0 - 0	0	0 - 0
Hairy cell	0 - 0	0	0 - 0
Myelocyte	0 - 0	0	0 - 0
Metamyelocyte	0 - 0	0	0 - 0
Band neutrophil	0 - 2	0	0 - 2
Segmented neutrophil	1 - 12	6	1 - 12
*[Total neutrophils]	1 - 12	6	1 - 12
Eosinophil	0 - 1	0	0 - 1
Basophil	0 - 0	0	0 - 0
Lymphocyte	75 - 98	90	0 - 98
Atypical lymphocyte	0 - 19	0	0 - 23
Monocyte	0 - 3	1	0 - 3
Plasma cell	0 - 0	0	0 - 0
NRBC / 100 WBC	0 - 0	0	0 - 0

Cell Classification or Finding	Expected Result	Participant Results			
Anisocytosis	Slight	None ( 49%)	Slight ( 49%)	Moderate ( 2%)	MarKed ( 1%)
Poikilocytosis	None	None ( 72%)	Slight ( 27%)	Moderate ( 0%)	MarKed ( 0%)
Macrocytosis	None	None ( 78%)	Slight ( 19%)	Moderate ( 3%)	MarKed ( 0%)
Microcytosis	None	None ( 88%)	Slight ( 10%)	Moderate ( 2%)	MarKed ( 0%)
Hypochromia	None	None ( 87%)	Slight ( 13%)	Moderate ( 0%)	MarKed ( 0%)
Polychromasia	None	None ( 87%)	Slight ( 12%)	Moderate ( 1%)	MarKed ( 0%)
Reduced number of platelets	Present	Absent( 34%)		Present( 66%)	
Increased number of platelets	Absent	Absent(100%)		Present( 0%)	
Phagocytosis of platelet(s)	Absent	Absent(100%)		Present( 0%)	
Bizarre or irregular platelets	Absent	Absent(100%)		Present( 0%)	
Clumped platelets	Absent	Absent( 99%)		Present( 1%)	
Giant platelets	Absent	Absent( 98%)		Present( 2%)	
Platelet satellitosis	Absent	Absent(100%)		Present( 0%)	
Auer rods	Absent	Absent(100%)		Present( 0%)	
Dohle bodies	Absent	Absent(100%)		Present( 0%)	
Hypersegmentation	Absent	Absent(100%)		Present( 0%)	
Pelger Huet anomaly	Absent	Absent(100%)		Present( 0%)	
Smudge / Basket cells	Present	Absent( 1%)		Present( 99%)	
Toxic granulation	Absent	Absent( 98%)		Present( 2%)	
Acanthocytes	Absent	Absent(100%)		Present( 0%)	
Basophilic stippling	Absent	Absent( 99%)		Present( 1%)	
Blister cells (pre keratocytes)	Absent	Absent(100%)		Present( 0%)	
Cabot rings	Absent	Absent(100%)		Present( 0%)	
Echinocytes (crenated/burr cells)	Absent	Absent( 98%)		Present( 2%)	
Elliptocytes (ovalocytes)	Absent	Absent( 74%)		Present( 26%)	
Howell-Jolly bodies	Absent	Absent(100%)		Present( 0%)	
Pappenheimer bodies	Absent	Absent(100%)		Present( 0%)	
Red cell agglutinates	Absent	Absent(100%)		Present( 0%)	
Rouleaux	Absent	Absent( 95%)		Present( 5%)	
Schistocytes	Absent	Absent( 98%)		Present( 2%)	
Schuffner's granules	Absent	Absent(100%)		Present( 0%)	
Sickle cells (drepanocytes)	Absent	Absent(100%)		Present( 0%)	
Spherocytes	Absent	Absent( 89%)		Present( 11%)	
Stomatocytes	Absent	Absent(100%)		Present( 0%)	
Target cells (codocytes)	Absent	Absent(100%)		Present( 0%)	
Tear drop cells (dacrocytes)	Absent	Absent( 94%)		Present( 6%)	
Bacteria	Absent	Absent(100%)		Present( 0%)	
Fungi/yeast	Absent	Absent(100%)		Present( 0%)	
Malaria/Babesiosis	Absent	Absent(100%)		Present( 0%)	
Stain precipitate	Absent	Absent( 99%)		Present( 1%)	
Phagocytosis of red cell(s)	Absent	Absent(100%)		Present( 0%)	

\* Obtained by combining individual results