



**PARTICIPANT STATISTICS**

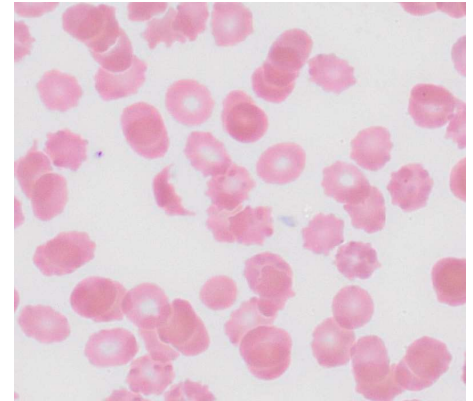
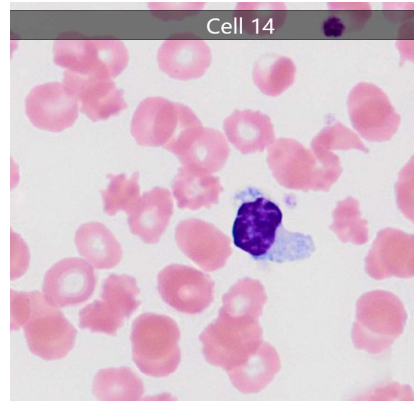
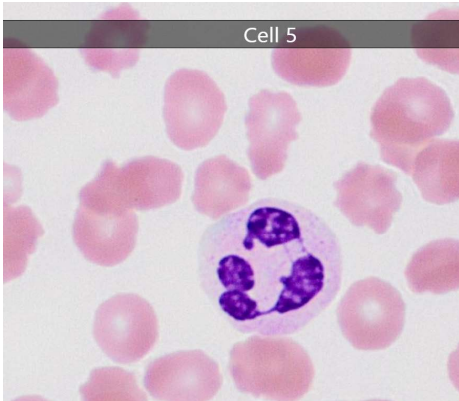
**THIRD QUADRIMESTER 2016**

**BASIC HEMATOLOGY WITH MANUAL DIFF**

Name	Line No.	Specimen 1				Specimen 2				
		Range & Type	Mean	SD	Range & Type	Mean	SD	No. of Labs		
PBS, Basophils %	1	0-4	C	0	1.3	0 - 8	S	3.3	1.5	11
PBS, Eosinophils %	1	0 - 9	S	4	1.3	8-18	C	12.7	1.5	11
PBS, PMN (Bands/Segs) %	1	51 - 61	S	56	1.4	53 - 64	S	58.7	1.9	11
PBS, Lymphocytes %	1	21 - 47	S	34	4.5	12-29	S	20.7	2.7	11
PBS, Monocytes %	1	0 - 9	C	4	0	0 - 12	S	3.3	2.7	11
PBS, Abnormal/Other %	1	0 - 15	S	2	4.5	0 - 10	S	1.3	3	11

Question/Response	Specimen 1		Specimen 2	
Yes/True	2		5	
No/False	4		1	***
<b>TOTAL POPULATION</b>	<b>6</b>			

\*Due to a lack of participant consensus, Specimen 1 was not evaluated this event.

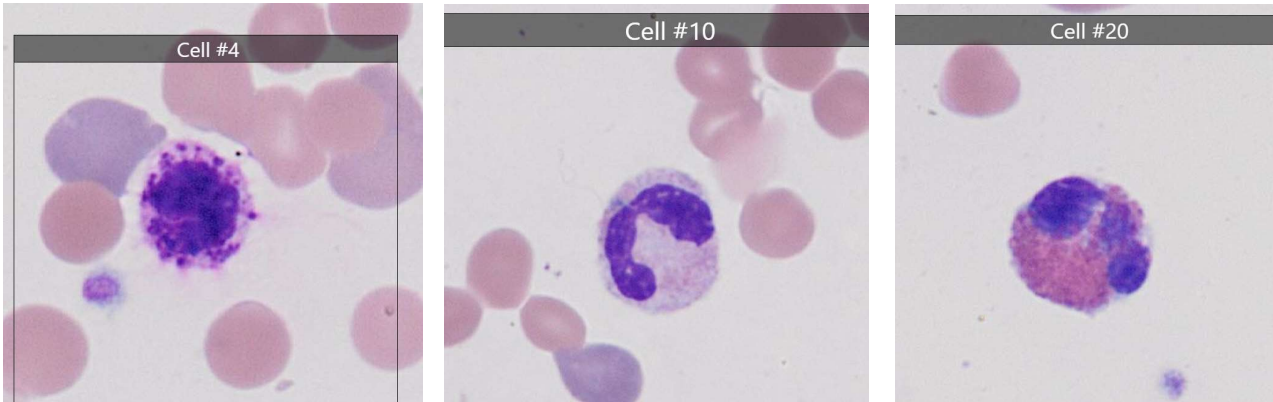
**Peripheral Blood Smear - Slide 1**

\*To see the original full-sized images, please refer to the original CD or sign on to your data entry sheet at <http://www.aab-pts.org/>

*Sample 16Q3-1: History: A 60-year-old woman visits her primary care physician with complaints of fatigue and inability to sleep at night due to a constant need to move her legs once she is in bed. She is concerned she may have "restless legs syndrome". Her physician performs a neurologic exam on her and orders a sleep study as well as several laboratory tests. The results of her CBC are as follows: WBC 3.2, Hgb 14.1 g/dL, Hct 43.6%, Plts 201,000/ $\mu$ L. Would you refer the slide for a pathologist's review?*

Review of the patient's peripheral smear shows mostly normochromic, normocytic red cells mild aniso- and poikilocytosis. Although many of the red cells are spherical with minimal variation in staining qualities, several echinocytes and RBC fragments can be seen. All white blood cell lineages are present in the expected distribution. Granulocytes are not increased in number and the majority are mature polymorphonuclear leukocytes with typical primary and secondary granules. Toxic granulation is not seen nor is a left shift, as might be expected with an infectious or reactive process. The lymphocytes have scanty blue cytoplasm with round nuclei and no prominent granules or vacuoles. The platelet count correlates with the automated value and no giant platelets are evident. The RBC morphology is suspect in this peripheral smear; however, it is difficult to determine whether this represents artifact or actual RBC morphology. Burr-like cells that have the appearance of echinocytes can result from preparation artifact; these cells only appear crenated and can be difficult to distinguish from true echinocytes. Such findings can also be the result of using an aged or improperly stored blood sample. A repeat sample could be requested or the results released; alternatively, the peripheral smear could be submitted for pathologist review.

## Peripheral Blood Smear - Slide 2



\*To see the original full-sized images, please refer to the original CD or sign on to your data entry sheet at <http://www.aab-pts.org/>

*Sample 16Q3-2: A 65-year-old man is admitted to the hospital with a two-week history of shortness of breath, dizziness, and swelling in his lower legs. His past medical history is significant for diabetes mellitus, viral hepatitis (type unknown at admission), hemolytic anemia, and chronic obstructive pulmonary disease. His CBC results are as follows: WBC 17.5, Hgb 8.2 g/dL, Hct 25.5%, Plts 344,000/ $\mu$ L. Would you refer the slide for a pathologist's review?*

The automated CBC values are significant for an elevated WBC count and anemia. A brief scan of the slide at low magnification shows marked abnormalities in the red blood cell line and confirms the increased number of WBCs. The majority of the WBCs are mature neutrophils with some having increased granulation. The number of band neutrophils is not increased and basophils (Cell #4) and eosinophils are easily seen. The most dramatic changes are seen in the red blood cells. Even at low magnification, one can appreciate hypochromic RBCs admixed with darkly staining, dense RBCs. There is moderate to marked anisocytosis (note the different size variation in the RBCs surrounding Cell #7). Spherocytes (RBCs which lack an area of central pallor, such as the RBCs surrounding Cell #5) and microspherocytes are present, as well as polychromatophilic and nucleated RBCs. Polychromatophilic red cells are immature cells that stain blue-gray due to the presence of increased amounts of RNA. They lack the typical area of central pallor. An increase in these cells as well as the presence of nucleated RBCs indicates increased erythropoietic activity in the bone marrow, due to increased peripheral destruction of red cells (hemolysis) or acute blood loss (bleeding). The presence of these findings often correlates with an increased reticulocyte count. There is mild poikilocytosis and there are no sickle cells, schistocytes, or target cells. This patient did present with a past medical history of hemolytic anemia and the peripheral smear indicates that this process may be ongoing or currently active. A detailed medical history, including current medications, as well as specific laboratory tests (direct and indirect antiglobulin tests, LDH, haptoglobin, and reticulocyte count, among others) would be helpful in determination of an etiology. Due to the degree of anisocytosis in conjunction with the presence of immature RBCs and leukocytosis, this peripheral smear would typically be referred to a pathologist for further review.