



## Importance of Slide Reviews

### Don't Believe Everything Your Hematology Analyzer Tells You

With more practices purchasing laboratory equipment, it is important to point out the limitations of hematology analyzers and stress the importance of reviewing blood smears. Even with the top of the line analyzers that veterinary diagnostic laboratories use today, there are certain abnormalities that can only be identified by trained eyes.

#### Abnormalities Commonly Identified on Slide Review

- Accurate assessment of platelet numbers when clumping is present
- WBC Morphology: left shift (bands and more immature forms), toxic change, stimulated vs. neoplastic lymphocytes, unusual and/or unclassified cells including blasts, mast cells, and basophils
- RBC Morphology: nucleated RBCs , polychromasia, poikilocytosis
- Hemoparasites

#### Slide review confirms the accuracy of the analyzer

**Example:** “Chancy”: 8 year old MC DSH; history of anorexia and lethargy of two days duration; physical exam revealed fever (104.9) and icterus, abdomen slightly painful. Clinic ran in-house CBC. Veterinarian was concerned about possible *Mycoplasma hemofelis*/immune-mediated anemia resulting in icterus and began treatment with fluids, doxycycline and prednisone.

	Hct (%)	WBC (/ul)	Neut (/ul)	Bands (/ul)	Lymphs (/ul)	Mono (/ul)	Eos (/ul)	Platelets (/ul)
<b>In-Clinic</b>	14.5	4010	610	0	360	2780	260	360,000
<b>Phoenix</b>	23.6	3000	2460	30	180	150	180	Adequate/ clumped

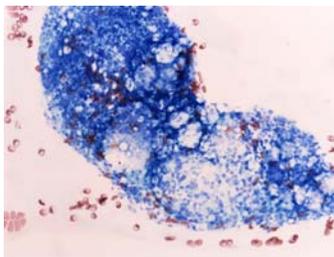
**Phoenix Comments:** Mild anemia without polychromasia. Neutrophils show slight to moderate toxic change, and there is a mild left shift to bands. This supports active, perhaps septic inflammation. Lack of neutrophilia suggests that inflammation/infection is acute and/or overwhelming. Systemic infection can result in mild icterus due to functional cholestasis, but rule-out cholestasis due to pancreatitis, hepatic or GI disease.



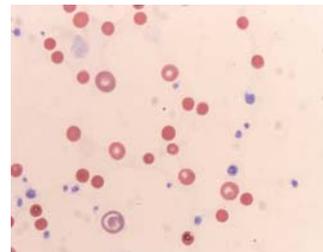
**Assessment:** In-clinic HCT was not accurate. The HCT was flagged as inaccurate by the analyzer as it did not match the hemoglobin concentration, but was not rerun. Larger toxic neutrophils and bands were likely classified as monocytes by the in-clinic analyzer. A high monocyte count on the hematology analyzer should always prompt a manual review to verify the monocytosis or correctly classify the toxic neutrophils, large potentially atypical lymphocytes, or mast cells, etc that may have been incorrectly classified as monocytes.

Based on the Phoenix CBC results, prednisone was discontinued, broad spectrum antibiotics for suspected infection begun and the source of the infection (pancreatitis) identified.

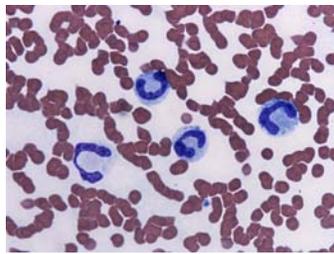
**Examples of what can only be found on reviewing the blood smear:**



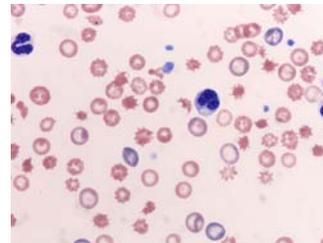
*Platelet Clump (50x)*



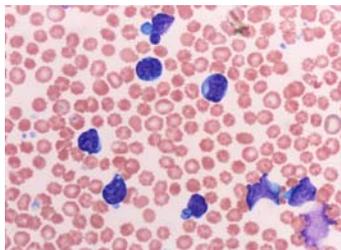
*Spherocytosis: Canine (50x)*



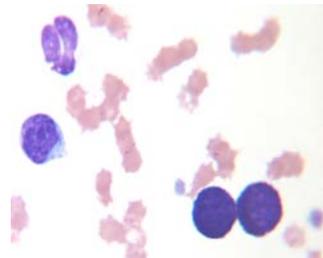
*Toxic Neutrophils (100x)*



*Acanthocytes and Schistocytes: Canine (50x)*



*Lymphocyte atypia and blasts: Canine (50x)*



*Mast cells: Feline (100x)*



**Take home point:** Make sure you are familiar with the limitations of your hematology analyzer. Know how to assess the results for inaccuracies. Review a blood smear to confirm your analyzer's results and detect those subtle changes not detected by the analyzer. It is in the patient's best interest to confirm questionable in-clinic results by a veterinary reference laboratory.