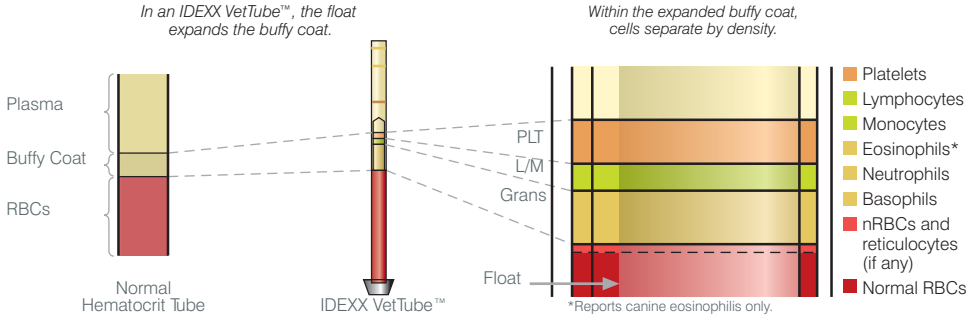
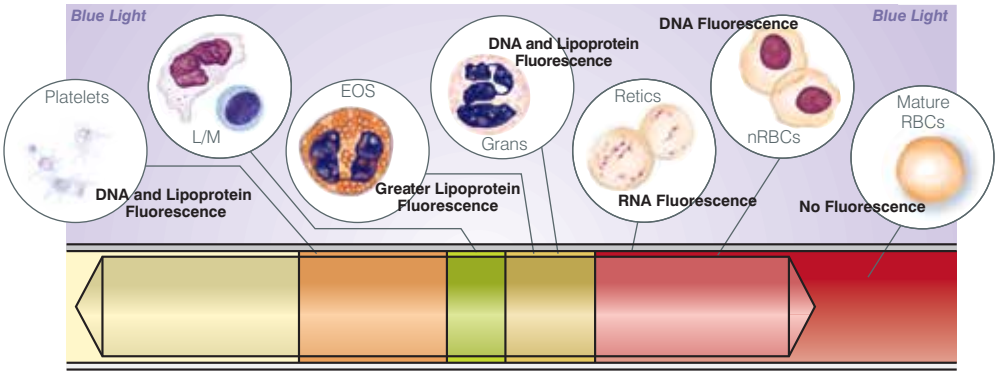
IDEXX VetAutoread™ Hematology Analyzer

Understanding the Buffy Coat Profile



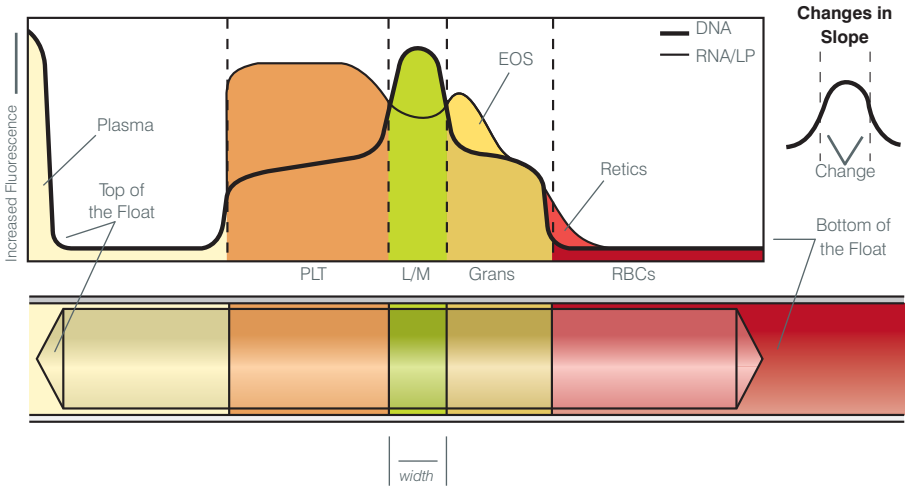
The Float Expands the Buffy Coat

Centrifuged blood naturally separates according to the densities of the cells. The more dense RBCs are at the bottom of the tube, the less dense WBCs and platelets next, then the plasma.



Fluorescence Distinguishes Cell Layers

The IDEXX VetTube contains acridine orange, a fluorescent stain that is absorbed by cellular components. DNA fluorescence distinguishes cells by their nuclei. RNA and lipoprotein fluorescence distinguishes cells by their cytoplasm. Mature, healthy RBCs absorb no stain and have no fluorescence.



The Buffy Coat Profile

The graph shows the fluorescence of the cells using two lines. The **thick** line shows fluorescence from DNA sources; the **thin** line shows fluorescence from RNA and lipoprotein sources.

The axes:

- The Y-axis shows the magnitude of fluorescence given off by each cell population. Note that L/M have high DNA fluorescence.
- The X-axis shows the beginning and end of each cell population. Lines are drawn where the DNA curve changes in slope. This curve change tells the analyzer that a new color (thus a new cell group) has begun.
- The **width** of each cell population or band tells how many cells there are. A wider band means **more** cells.

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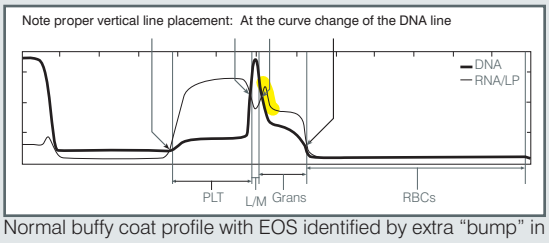
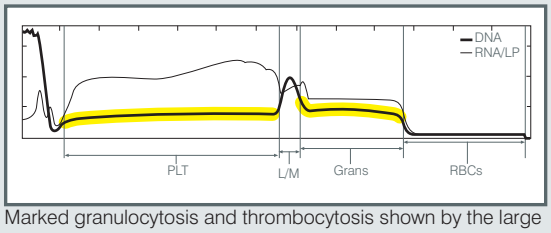
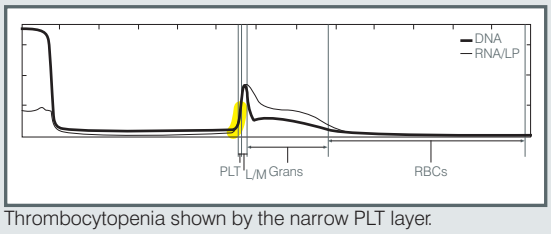
Buffy Coat Profile Interpretation Guide



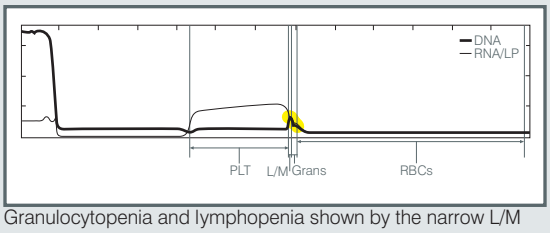
Normal buffy coat profile with EOS identified by extra "bump" in the Grans layer.



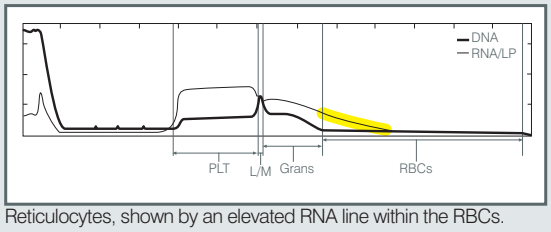
Marked granulocytosis and thrombocytosis shown by the large width of these cell populations on the graph.



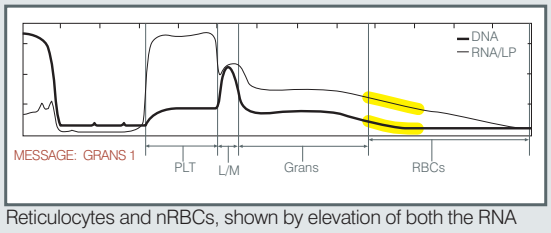
Thrombocytopenia shown by the narrow PLT layer.



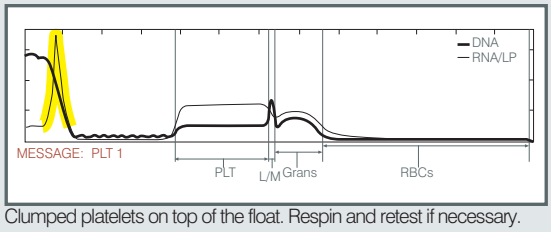
Granulocytopenia and lymphopenia shown by the narrow L/M and Grans layers.



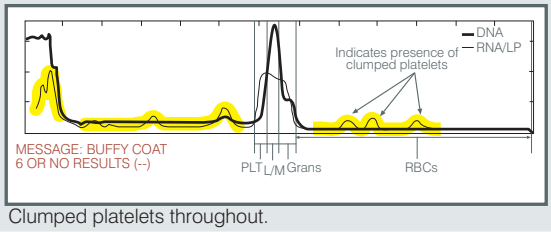
Reticulocytes, shown by an elevated RNA line within the RBCs.



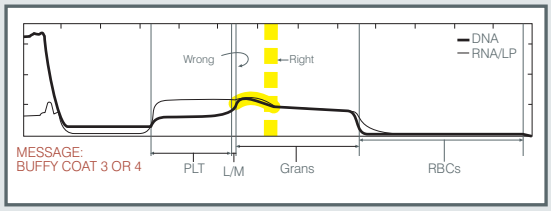
Reticulocytes and nRBCs, shown by elevation of both the RNA and DNA lines within the RBCs.



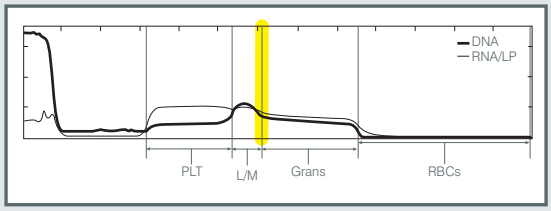
Clumped platelets on top of the float. Respin and retest if necessary.



Clumped platelets throughout.



System missed lymphocytes/monocytes. Let tube sit five minutes and rerun…



…five minutes later, the vertical line is correctly placed.

The buffy coat profile shows a whole blood "picture" of the sample to verify numerical results. More testing will reveal patterns of healthy and disease states. Examine the buffy coat profile on **every** sample to:

- Verify that vertical lines have properly distinguished cell groups.
- Search for clues of abnormal cells. Low or unfamiliar graph peaks may mean abnormal cells in need of microscopic investigation, or that cells are clumping.

The system's **# Flags** next to numerical results serve as a quality check. Flags will accompany some normal, and most abnormal, results (with a message above the graph) when:

The analyzer requires you to verify vertical line placement.

Action: If correct, proceed with diagnosis. (Note that small shifts in lines will most often not change overall values.)

Sample quality is poor due to clumped platelets. With severe clumps, the analyzer will not print results.

Action: Respin and retest; may need to redraw.

Abnormal patterns are detected or missing, or excessively wide layers occur.

Follow instructions in the message and examine blood film.

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