Science of Sysmex - Hematology Case Study

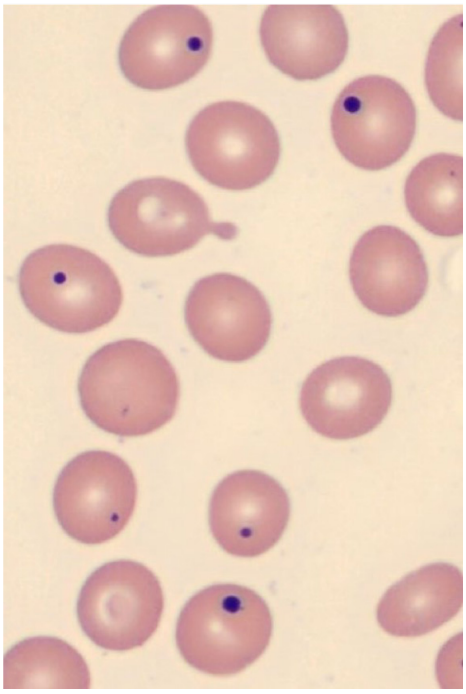
Howell-Jolly Bodies

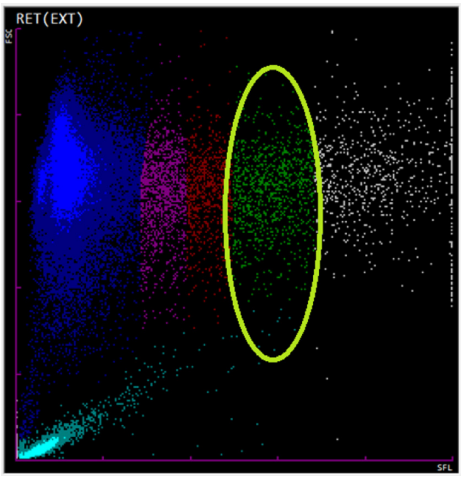
Howell-Jolly bodies, sometimes abbreviated H-J bodies, are DNA remnants that remain in an RBC after its nucleus is extruded. In normal patients, these inclusions are removed by the spleen. However, if the spleen has been removed or splenic function is compromised, Howell-Jolly bodies may be observed on a Wright-stained peripheral blood smear and appear as single small, round, dark blue inclusions.

Because Howell-Jolly bodies contain nucleic acids, these inclusions are readily stained by the Fluorocell™ RET reagent on XN-Series™ and XN-L Series™ analyzers. Fluorocell RET is a fluorescent stain that has an affinity to nucleic acids present in cells, and is used to identify reticulocytes in the RET channel on Sysmex analyzers. Reticulocytes contain small amounts of nucleic acid and are differentiated from mature RBCs, which do not contain any nucleic acid.

When present, Howell-Jolly bodies are detected in the RET channel as having greater amounts of nucleic acid than reticulocytes, and therefore, do not usually interfere with the automated reticulocyte count. Rather, RBCs containing Howell-Jolly bodies are plotted in the Upper Particle Plateau, or UPP, region of the RET(EXT) scattergram (circled in yellow at right) and are not included in the reticulocyte count. However, when significant amounts of Howell-Jolly bodies are present, the increased activity in the UPP region may trigger a "RET Abn Scattergram" interpretive message on the analyzer and an asterisk (*) will be attached to results derived from the RET scattergram (RET%, RET#, IRF, RET-He).

In addition to Howell-Jolly bodies, other peripheral blood findings that may fall into the UPP area include NRBCs, basophilic stippling, parasites and "shift" reticulocytes. These cells contain more nucleic acid than mature RBCs and reticulocytes (which fall to the left of the UPP region in the RET scattergram), and less nucleic acid than WBCs (which fall to the right of the UPP region). Refer to the XN-Series™ Flagging Interpretation Guidefor more information regarding how to handle analyzer flags.





RET(EXT) scattergram showing increased activity in UPP area

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