

## The blood film's song

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*Received on February 24, 2022. Accepted on March 18, 2022.*

If blood films could speak to pathologists, just what would they say?  
Chant swan songs of their obsolescence, forlornly lined up on a tray?  
Or would they much more likely, belligerently argue and put up a fight.  
Maybe sulk, pout, and clamour for attention. Like a forgotten star, in a fading spotlight.  
Or perhaps they'd just gently remind us, about unrevealed secrets that may yet lurk,  
In familiar boring corners, blinded by technology's flashy young Turks.  
Thus, we ventured to pen down, the smears' thoughts, as might be,  
If microscopes had megaphones, that could set voiceless objects free.

«Greetings, dear microscopist, it's me: the blood film clamped tight onto your stage,  
You don't love me anymore, considering how I'm just a diagnostic "entry gate".  
I remain an easy, inexpensive smear, my very name begins with a "peripheral",  
But the insights that the low-maintenance me reveals, are to your diagnosis, very real.  
Glass slides, blood cells, and their stains, all cheaply contribute to my composition,  
The cubital fossa's veins, fingertips and earlobes, are all my easily accessible origins.  
My life begins with the sample collection, a manoeuvre with many a delicate nuance,  
For the patient it's a slightly painful beginning, for a morphologist, of an eternal romance.

To create me, on a slide is placed a blood drop - neither too big nor too small,  
Then backed-up to it is a smooth-edged spreader, to avoid a "tailing" pitfall.  
I must be spread deftly on the slide, so at this stage one must not dither,  
Or else my all-important tail, will be an opaque straight-edge, not a shimmering feather.  
Then I must be dried and pickled, so fix me as soon as you possibly can,  
To then colour me up, using stains like Jenner, Giemsa, Wright, or no pre-fixation Leishman.  
These Romanowsky-family cousins, they create a brilliant metachromatic riot,  
Matchlessly distinguishing the cytoplasmic granules, they render me a very comely sight.

Thus beautified, I can be layered up with DPX, and swathed elegantly with a cover-slip,  
Or just dabbed on with some cedarwood oil, before commencing my microscope stage trip.  
The astute observer must start with a low-power scan, as due attention to my spiky tail is vital,  
For here lurk cell clumps, microfilaria and agglutinins, among other sights that are not trivial.  
Then turn your focus on the carpet of erythrocytes, in an area where they're just nudging,  
The most numerous cells in the human body, isn't it ironical that they hate overcrowding?  
For the differential leucocyte count next, a systematic battlement approach is best,  
Please count at least 200 cells for statistical confidence, and only then take a rest.

You may think it's the same old cells, that tedious old me puts on display every time,  
But the subtleties of their numbers, proportions and appearances, can easily a naïve mind beguile.  
On peering through the eyepiece, if I show you pencils, pessaries and microcytes,  
Treat your patient with iron, and watch the polychromatophils magically rise.  
And if it is Howell-Jolly bodies that are observed, along with Cabot rings,  
Dysmaturational erythropoiesis, to your mind should first spring.  
Target cells with excess membranous baggage, and schistocytes in tatters,  
Spherocytes that pop-off on dilution, are some of the many other erythrocytes that matter.

Leukoerythroblastosis, especially with some nasty uninvited blasts in circulation,  
Is almost always an indication, for an urgent bone marrow examination.  
Aür rods, Phi bodies, faggots and cup-like blasts – all of the beastly lot suggest AML,  
Just as a left shift, middle bulge and basophilia, augur the less lethal, but no less welcome CML.  
Toxic changes, dysgranulocytes, leukocytic inclusions and abnormalities of segmentation,  
Are just a few more informative messengers of granulocytic (dis)organization.  
Stuck with a pseudocytopenia due to clumped cells? I am the best antidote for the analyser's tricks,  
Just as I can guess at your gender, by the presence (or not) of drumsticks.

I'm a window to the bone marrow, a predictor of its health,  
About the spleen's, the liver's and the gut's functions too, I can reveal a wealth.  
You dismiss me today as a plain screening test, but I'll nobly let that affront be,  
Only gently remind you, dear novice, that what your mind knows, your eyes will see.  
Immunophenotyping, microarrays, NGS and zebrafish – they may all be cutting-edge technology,  
But in virtually every circumstance, the story starts with, and isn't over without old me.  
However, I am not a lone warrior, I have some staunch friends,  
The background clinical data and automated hemogram findings, are often critical means to my ends.

I'll remind you the next time you disparage me, as a relic of the pre-molecular era past,  
That my digital morphology, artificial neural networks and spectral analysis, are all moving in very fast.  
Abnormal leukocytes, poikilocytic erythrocytes, platelet clumps or bugs,  
They'll easily catch them, in cases where humans like you can only shrug.  
So, I might surprise you still, gentle reader, with secrets that you weren't aware that I hide,  
The powers that you didn't know I possessed, new tricks and usefulness that my age belied.  
On that cheerful note, I bid you goodbye, and prepare to regain my place in the sun,  
My future is bright my dear colleagues, in fact the best may have just begun».

*Conflict of interests:* the authors have no conflict of interests to declare.