

## Last Month's Slides



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#### Side 1

Hairy Cell Leukaemia.  
Chromatin is not typical of  
hairy cells, cytoplasm is  
typical.

#### Slide 2

See case study on right

#### Slide 3

Neutrophilia, anisocytosis,  
Target Cells (+),  
Erythroblastosis

#### Slide 4

Blasts-immature  
chromatin, ALL

#### Slide 5

Lymphopenia

#### Slide 6

Lymphopenia  
-lymphoid population with  
polymorphic appearance

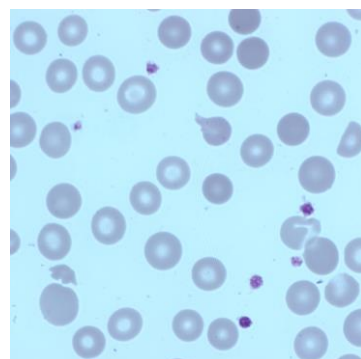
## Monthly Digital Case study August 2021 slide 2

### Presentation

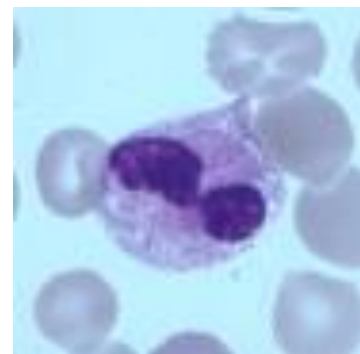
Female (76 years old)

### FBC Results

WBC 20.6\* ( $10^3/\text{mm}^3$ )  
RBC 2.67\* ( $10^6/\text{mm}^3$ )  
HGB 8.0\* (g/dL)  
HCT 24.0\* (%)  
MCV 90 (fL)  
MCH 30.0 (pg)  
MCMH 33.3 (g/dL)  
PLT 123 ( $10^3/\text{mm}^3$ )  
Neutrophils 71.5%  
Lymphocytes 9.2%  
Monocytes 9.2%  
Eosinophils 0.9%  
Basophils 0.0%



*Anisocytosis and polychromasia*



*Neutrophil*

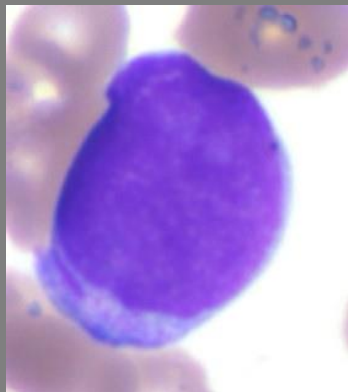
### Slide review

Patient on intensive care unit.  
Film shows neutrophilia, anaemia, anisocytosis and discrete myeloma.

## Cell Quiz

Can you name the structure seen in the slide below?

**CLUE:** Often found in Myeloid Blast Cells during acute myeloid leukaemia.



## Last Month's Cell Quiz

This cell is characterised by abundant granular cytoplasm with predominance of specific granules, kidney-shaped or indented nucleus, coarser chromatin, and lack of distinct nucleoli:



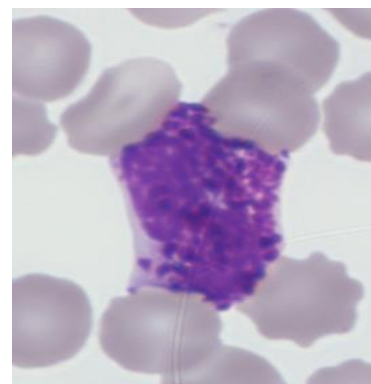
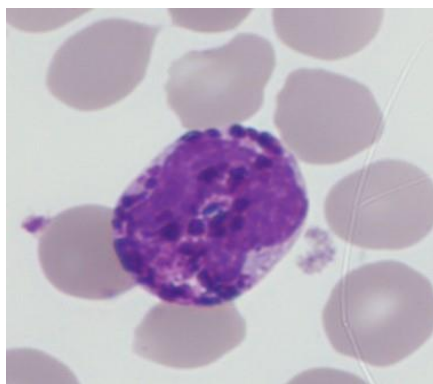
**Answer:** Metamyelocyte

A metamyelocyte is a cell undergoing granulopoiesis. It originates from a myelocyte and is the precursor of a neutrophil.

The metamyelocyte is characterised by the appearance of a bent or kidney-shaped nucleus, and does not have a visible nucleolus under the light microscope.

## Basophil article

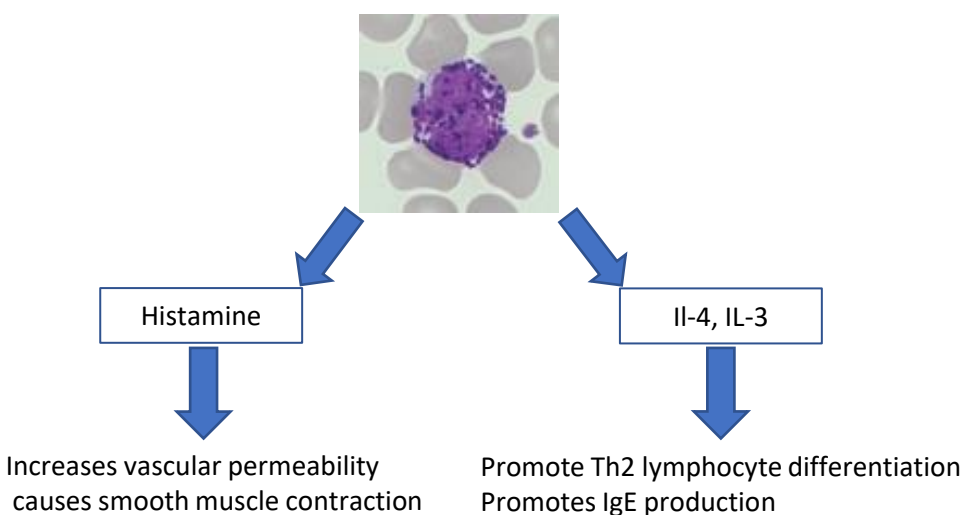
Basophils were first described by Paul Ehrlich in 1879 and are the least common of all the white cells, the normal range being 0.1 – 1% or 0.0 to 0.3 x10<sup>9</sup>/l. When stained by Romanowsky methods e.g May-Grunwald Giemsa, basophils can be identified by their prominent large dark basophilic granules which often occlude the bi lobed nucleus. The lifespan of the peripheral Basophil is in the order of 70 hours.



Basophils develop in the bone marrow from a common myeloid stem cell. Distinct basophil development is under the control of many factors, such as Interleukin -3 (IL-3), thymic stromal lymphopoietin (TSLP), and Interferon regulatory factor 8 (IRF8).

Basophils have the capability to produce histamine (the only cell able to do this) and serotonin and are partially responsible for various allergic (immune) reactions in the body. Basophils play an important role in protecting the body from parasitic infections, like helminth infections. If Basophil levels are low, then it may take longer for the body to respond to such infections. Basophils are recruited to sites of inflammation and are subsequently activated by numerous factors, including IgE crosslinking, complement fragments and IL-8, upon activation histamine and IL-4 and IL-3 is released.

### Roles of the major basophil activation products in allergic disease

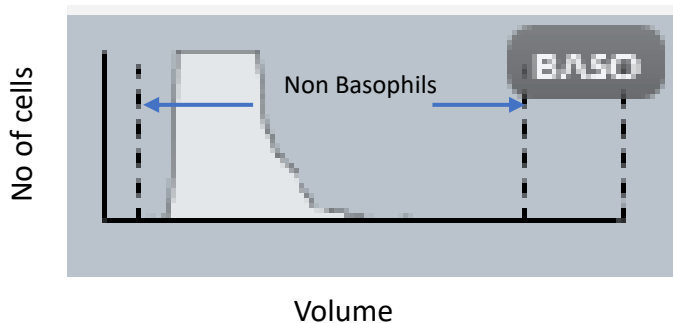


Basophils are known to play a role in allergic reactions and are thought to contribute to the pathogenesis of allergic contact dermatitis, atopic dermatitis, allergic drug reactions, immediate hypersensitivity reactions (eg, anaphylaxis), asthma, bullous pemphigoid, lupus nephritis, Crohn's disease, skin and kidney allograft responses and acute and chronic myelogenous leukaemia. The Basophil Activation Test (BAT) is used experimentally to detect allergic reactions to drug, food and venom. The BAT is a flow cytometry based assay, where allergens are introduced to whole blood, stained with antibodies coupled to fluorochromes directed against known activation markers, the red cells are lysed and the cell suspension made ready for testing. The most common Basophil activation markers used, are CD63 and CD203c. The BAT is used in place of the oral food challenge (OFC) which involves the ingestion of suspected allergens and as such might induce a severe allergic reaction. Therefore the OFC can only be performed under clinical supervision.

Basophilia is a rare finding and is associated with Chronic Myeloid Leukaemia, allergic rhinitis, radiation therapy, and bee stings.

Basophil counting on the [Yumizen H1500/H2500](#):

The Basophil channel works on the principle that when incubated with the reagent Basolyse non basophils are stripped of their cytoplasm, whilst Basophils retain the cytoplasm and therefore can be separated based on size. The resulting dilution is then analysed using aperture impedance and a cell size distribution curve is generated.



## World Sepsis Day 2021

The 13th of September 2021 was World Sepsis Day. Accounting for 11 million deaths in the world annually, sepsis is the number one cause of death in hospitals and can affect anyone, with even higher risk among very young, ill, or old people.

[Read our blog](#) about its symptoms and stages, how crucial time is, the tests needed, and how point of care IVD systems can enable quick decisions.

### [QSP 2.0](#)

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### Bibliography

Basophils, British Society of Immunology, Bitesize Immunology  
Karen Buckland.

Basophils and allergic inflammation, J. Allergy Clin Immunol, 2013 October;132(4):789-788

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