

# Hematology paper MLT 2<sup>nd</sup> final term

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Sec A

Q. 1

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## Erythrocyte differentiation

In the process of red blood corpuscle maturation, a cell undergoes a series of differentiations. The following **stages** of development all occur within the bone marrow: A hemocytoblast, a multipotent hematopoietic stem cell, becomes.

What is erythropoiesis how this process is regulated? ^

**Erythropoiesis is regulated** by the combined effects of microenvironmental and growth factors that promote the survival, proliferation and/or differentiation of **erythroid** progenitors, and nuclear factors that **regulate** the transcription of genes involved in the establishment of the **erythroid** phenotype.



What hormone controls erythropoiesis? ^

Erythropoietin is the principal hormone that regulates erythropoiesis and its transcription is mediated by hypoxia inducible factor-1 (HIF-1). Binding of **Epo** to its receptors (EpoR) stimulates erythroid cell division and proliferation and inhibits erythroid progenitor apoptosis Fisher (2003).

Which of the following is helpful for erythropoiesis? ^

**Erythropoietin** (EPO) is the key hormone responsible for effective **erythropoiesis**, and iron is the essential mineral required for hemoglobin production. EPO allows survival and proliferation of **erythroid** precursor cells by generating intracellular signals resulting in the prevention of apoptosis.

Q 2



**A blood smear can be used to help diagnose or check on many conditions, such as:**

- Anemia.
- Jaundice.
- Sickle cell disease.
- Thrombocytopenia.
- Malaria.
- Sudden kidney failure.
- G6PD deficiency.
- Certain cancers.

Can a blood smear detect leukemia? 

For the **peripheral blood smear**, a sample of **blood** is looked at under the microscope. Changes in the numbers and the appearance of different types of **blood** cells often help **diagnose leukemia**. Most patients with AML have too many immature white cells in their **blood**, and not enough red **blood** cells or

Smear artifacts may be caused by dirty slides, fat droplets or poor quality slides. Laboratory safety precautions should be observed when ...



What does a blood smear detect?



A **blood smear** is a **blood** test used to **look for** abnormalities in **blood** cells. The three main **blood** cells that the test focuses on are: red cells, which carry oxygen throughout your body. white cells, which help your body fight infections and other inflammatory diseases.

Q3

Briefly, these cells have key immunologic functions, including phagocytosis and ... role in emergency granulopoiesis.<sup>3</sup> While C/EBP $\alpha$  -null hematopoietic precursor cells are capable of ...



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**Granulopoiesis** is the process by which committed hemopoietic progenitor cells develop into granulocytes under the influence of various growth factors and cytokines.

What cells are granulocytes? ^

Granulocytes are a type of white blood cell that has small granules. These granules contain proteins. The specific types of granulocytes are neutrophils, **eosinophils**, and **basophils**. Granulocytes, specifically neutrophils, help the body fight bacterial

Granulopoiesis begins when the myeloblast differentiates into a neutrophilic promyelocyte that is irreversibly committed to the neutrophilic ...

Granulopoiesis is hematopoiesis of granulocytes. It occurs primarily within bone marrow and involves the following stages: \* Pluripotential ...

Q4



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**Iron deficiency anemia** occurs when your body doesn't have enough **iron** to produce hemoglobin. Hemoglobin is **the** part of red blood cells that gives blood **its** red color **and** enables **the** red blood cells to carry oxygenated blood throughout your body. Oct 18, 2019

What can cause iron deficiency anemia? 

### **Causes of iron deficiency anemia**

- Inadequate iron intake. Eating too little iron over an extended amount of time can cause a shortage in your body. ...
- Pregnancy or blood loss due to menstruation. ...
- Internal bleeding. ...
- Inability to absorb iron. ...
- Endometriosis.



**To treat iron deficiency anemia, your doctor may recommend that you take iron supplements. Your doctor will also treat the underlying cause of your iron deficiency, if necessary.**

...

#### **Treatment**

1. Take iron tablets on an empty stomach. ...
2. Don't take iron with antacids. ...
3. Take iron tablets with vitamin C.

What are the 6 types of anemia? ^

#### **They include:**

- Iron deficiency anemia. This most common type of anemia is caused by a shortage of iron in your body. ...
- Vitamin deficiency anemia. ...
- Anemia of inflammation. ...
- Aplastic anemia. ...
- Anemias associated with bone marrow disease. ...
- Hemolytic anemias. ...
- Sickle cell anemia.



Q,5

How do you classify anemia?

