

## ANEMIA

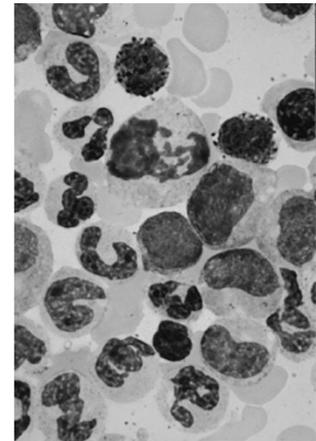
- **Iron-Deficiency Anemia** (most common)
- **Aplastic Anemia** – bone marrow does not produce enough **RBC**
- **Hemorrhagic anemia** – due to extreme blood loss
- **Pernicious anemia** – **B12** deficiency
- **Sickle Cell Anemia** (genetic) - blood cells abnormally shaped



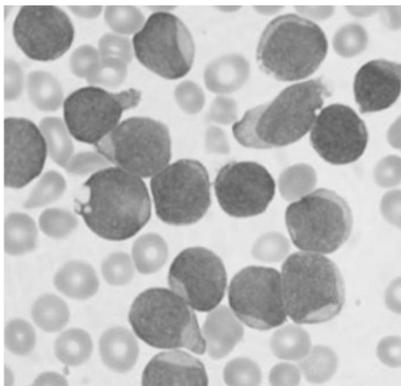
## Leukemia

- Type of **cancer**
- Overproduction of immature **white** blood cells
- They take the place of **RBCs**
- Treatable with **bone marrow transplants, chemotherapy, radiation**

Blood Smear of a patient with Leukemia



Blood Smear; Leukemia



## Infectious mononucleosis

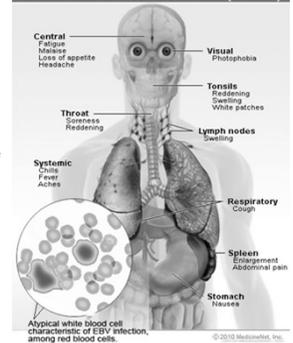
sometimes called "**mono**" or "the kissing disease," is an infection usually caused by the **Epstein-Barr virus (EBV)**.

The designation "mononucleosis" refers to an increase in one type of white blood cells (lymphocytes) in the bloodstream relative to the other blood components as a result of the EBV infection.

EBV is very common, and many people have been exposed to the virus at some time in childhood.

Article at [Medicinenet](#)

### Infectious Mononucleosis (Mono)



## Blood poisoning - **Septicemia**

- An infection enters the blood stream
- Can be deadly
- Treated with **antibiotics**



## Thrombocytopenia

- Low production of **Platelets**
- Causing bleeding or bruising

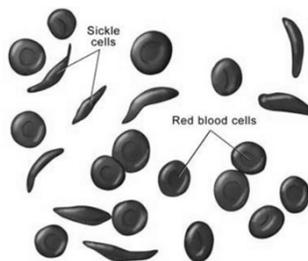


A bruise is caused when tiny blood vessels are damaged or broken as the result of a blow to the skin (be it bumping against something or hitting yourself with a hammer).

The raised area of a bump or bruise results from blood leaking from these injured blood vessels into the tissues as well as from the body's response to the injury.

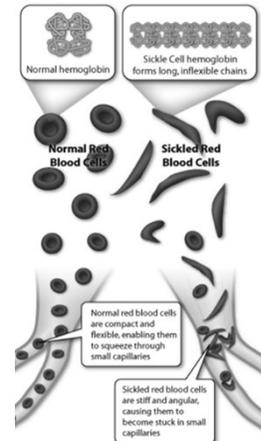
## SICKLE CELL ANEMIA

- Genetic Disorder
- Abnormally shaped blood cells
- Parents can be carriers (asymptomatic)



## Complications

1. Pain
2. Lethargy
3. Lifelong anemia (low red blood count)
4. Organ failure
5. Stroke



Hemophilia - inability or reduced ability of the blood to **clot**; genetic disorder

## HEMOPHILIA

This disorder causes a failure of the blood to clot

Patients can be treated with blood transfusions that include clotting agents



## Queen Victoria



Carrier for Hemophilia

## Jaundice

- In newborns, caused by the liver not functioning fully
- Secretes bilirubin into the blood causing the yellow color
- Exposure to fluorescent lights (bili lights) will break down the substance



## Quick Genetics Review

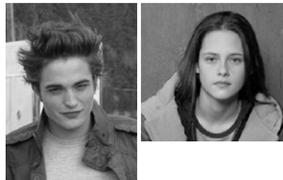
A gene consists of 2 alleles  
(represented by letters)  
One allele is usually dominant over the other

Example:

Genotype	Phenotype
PP	widow's peak
Pp	widow's peak
pp	straight hairline

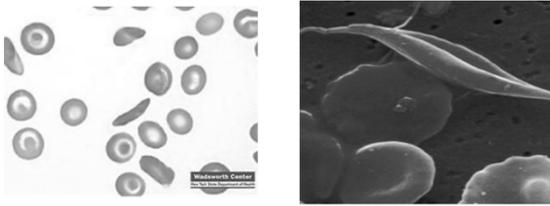


A person with a widow's peak (Pp) is married to a person with a straight hairline (pp), what percentage of their children will have a straight hairline?



Two people who are both heterozygous for the widow's peak trait are married. What percentage of their children will have a straight hairline?





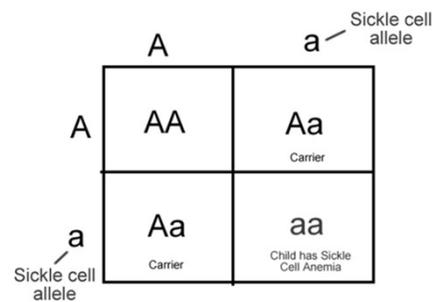
Sickle Cell Anemia is actually codominant

AA = normal

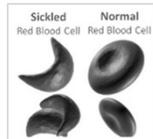
Aa = sickle cell trait (few symptoms)

aa = sickle cell anemia

If both parents are carriers, child has a  $\frac{1}{4}$  chance of having the disease



A female has sickle cell anemia and is married to a man who appears normal. A doctor tests the man and determines that he does NOT have sickle cell trait. What is the chance that this couple will have a child with sickle cell anemia?



What happens when a female who is a carrier marries a man with sickle cell anemia?



Hemophilia is carried on the X chromosome

Females  $X^H X^H$  normal

$X^H X^h$  carrier

$X^h X^h$  hemophiliac

Males  $X^H Y$  normal

$X^h Y$  hemophiliac



What happens when a female who is a carrier marries a normal man?



What happens when a female who is normal marries a man who has hemophilia?

### Pedigree of Hemophilia

