

# Forensic Science: Blood Basics Notes

Name \_\_\_\_\_

## 1. What makes up the blood in our bodies?

- \_\_\_\_\_ (erythrocytes) – The most abundant cells in our blood; they are produced in the bone marrow and contain a protein called hemoglobin that carries oxygen to our cells.
- \_\_\_\_\_ (leukocytes) – They are part of the immune system and destroy pathogens.
- \_\_\_\_\_ – The yellowish liquid portion of blood that contains electrolytes, nutrients and vitamins, hormones, clotting factors, and proteins such as antibodies to fight infection.
- \_\_\_\_\_ (thrombocytes) – The clotting factors that are carried in the plasma; they clot together in a process called coagulation to seal a wound and prevent a loss of blood.

## 2. Blood Facts

A. The average adult has about \_\_\_\_\_ liters of blood inside of their body, which makes up 7-8% of their body weight.

B. This red liquid is living \_\_\_\_\_ that carries oxygen and nutrients to all parts of the body, and carries carbon dioxide and other waste products back to the lungs, kidneys and liver for disposal. It fights against \_\_\_\_\_ and helps heal \_\_\_\_\_.

C. There are about one \_\_\_\_\_ red blood cells in two to three drops of blood. For every \_\_\_\_\_ red blood cells, there are about \_\_\_\_\_ platelets and \_\_\_\_\_ white cell.

## 3. Genetics of Blood

Your blood type is established before you are \_\_\_\_\_, by specific \_\_\_\_\_ inherited from your parents. These two genes - one gene from your \_\_\_\_\_ and one from your \_\_\_\_\_ - determine your blood type by causing proteins called \_\_\_\_\_ to exist on the surface of all of your red blood cells.

## 4. Blood Types

A. There are three alleles or genes for blood type: \_\_\_\_, \_\_\_\_, and \_\_\_\_.

B. What are the four types of blood? Give the genotypes for each.

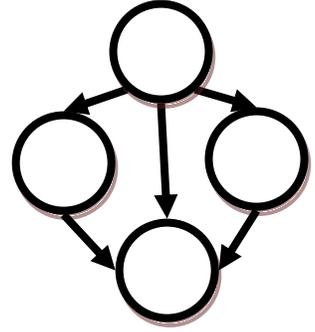
Type A = \_\_\_\_    Type B = \_\_\_\_    Type AB = \_\_\_\_    Type O = \_\_\_\_

## 5. How common are the four blood types?

A = \_\_\_\_ %    B = \_\_\_\_ %    AB = \_\_\_\_ %    O = \_\_\_\_ %

## 6. Blood Transfusions

- A. What blood type is known as the "Universal Donor"? \_\_\_\_\_
- B. What blood type is known as the "Universal Recipient"? \_\_\_\_\_
- C. Complete the diagram using the class notes. →
- D. Complete this statement: A person with Rh + blood may receive blood that is \_\_\_\_\_ or \_\_\_\_\_, while a person with Rh - blood can only receive \_\_\_\_\_ blood.



## 7. Rh (Rhesus) Factors

What animal helped scientists discover Rh proteins in blood? \_\_\_\_\_

\_\_\_\_\_ If someone has the Rh protein, they are said to have Rh \_\_\_\_\_ blood. If someone does not have this protein, they have Rh \_\_\_\_\_ blood.

## 8. How can blood be used as evidence in a crime?

- Blood samples – Can be analyzed to determine \_\_\_\_\_ and \_\_\_\_\_, which can be matched to possible suspects.
- Blood droplets – Can be analyzed to give clues to the location of a \_\_\_\_\_, movement of a \_\_\_\_\_, and type of \_\_\_\_\_.
- Blood spatter – Can be analyzed to determine \_\_\_\_\_ that give investigators clues to how a crime might have happened.