

Week 1 - Blood

Learning Objectives:

- Identify the cellular components of blood and state their functions.
- Explain the role of the white blood cells in protecting the body from disease.
- Analyze complete blood counts.
- Learn how to use an automatic hematology analyzer and how to prepare a peripheral smear.
- Name the 4 major blood types in the ABO system.
- Explain the principles of blood typing using Eldon cards.
- Describe Rh incompatibility and hemolytic disease of the newborn.

Introduction:

The body is a complex multicellular organism that comprises trillions of cells working together as tissues, organs, and systems. These cells require a continuous supply of oxygen and nutrients in order to function. They also need an efficient and fast means of delivery of these substances as well as a means of removing waste byproducts.

Blood is composed of 2 components: blood plasma and the formed elements. In the first lab simulation, you will generate complete blood counts and prepare blood smears of control and patient samples to diagnose various blood disorders in three patients. Dive into the inner workings of the different blood components with immersive 3D animations, where you will get acquainted with the morphology and function of red blood cells, white blood cells, and platelets.

In the second lab you will learn the basics of antibodies. Even though antibodies are proteins that protect us from harmful intruders, they can sometimes cause problems. You will learn about antibody-antigen interaction and the mechanism that lies behind Rh incompatibility. You will discover what antigens and antibodies have to do with blood type, and why mixing certain different blood types together can cause problems. In this simulation, you will examine blood samples from a mother and her unborn child, to determine whether or not they are compatible.

Assignment:

Part 1: Complete **Labster** “Hematology: Introduction to Blood”

As you complete the lab, have the lab report ready to record data. The theory section of the lab is a useful resource.

Part 2: Complete **Labster** “Antibodies: Why are some blood types incompatible?”

As you complete the lab, have the lab report ready to record data. The theory section of the lab is a useful resource.

Part 3: Complete the Lab report.