

Welcome to this lesson today on hemoglobin.

Today we are going to be discussing the structure and function of hemoglobin.

Hemoglobin is a protein containing iron that's found in red blood cells, and it binds to oxygen.

Hemoglobin is an important part of red blood cells, because that's what allows our blood cells to bind to oxygen, and then that oxygen is carried to the cells and tissues of our body, and is necessary for those cells and tissues to be able to function. So hemoglobin is a component of red blood cells.

Oxyhemoglobin is the name that we give to hemoglobin that is carrying oxygen. So anytime hemoglobin is carrying any amount of oxygen, we refer to it as oxyhemoglobin.

There are various factors that can determine how much oxygen hemoglobin can carry at a time.

One molecule of hemoglobin can bind up to four oxygen molecules. It can bind up to four oxygen molecules.

Factors such as the ratio of carbon dioxide to oxygen in the blood, temperature and acidity of the tissues can affect this amount of oxygen that binds to hemoglobin.

But, as I mentioned, it can bind up to four oxygen molecules.

We're going to take a look at the structure of a hemoglobin molecule.

There's actually two parts to a hemoglobin molecule. One is globin, which is a protein, and this is made up of four linked polypeptide chains. Each of these polypeptide chains is associated with a heme group.

Let's take a look at our picture down here. We have four polypeptide chains. One. Two. Three. Four. So when we talk about globin, that's what we're talking about, is these four linked polypeptide chains.

As I mentioned, each of these four linked polypeptide chains is associated with a heme group. A heme group is the part of hemoglobin that contains iron.

Iron is found in the middle of the heme group, and the iron is actually what binds to oxygen.

So our heme groups. You can see them on our picture right here. There's one, two, three, and four. So those two components together-- the globin and the heme group-- are what make up the structure of hemoglobin.

Now, as I mentioned, hemoglobin can bind up to four oxygen molecules, and that's because we have these four

heme groups, each containing iron in the middle. And that's what binds to our oxygen. So one, two, three, four oxygen molecules could bind at a time.

When hemoglobin is carrying oxygen, as we talked about up here, it's referred to as oxyhemoglobin. When the hemoglobin is carrying oxygen, the blood appears to have a deep red color. And that's because when the iron in these heme groups binds to the oxygen, it produces that deep red color.

So if you're familiar with chemistry at all, you know that when iron is exposed to oxygen, it produces rust. And rust is kind of a deep red color. So the process of that reaction that's happening gives blood that deep red color, when the iron in the heme group binds with oxygen. And when it's lacking oxygen, the blood appears to be more of like a purplish, bluish color as it travels through your veins.

So that's just a little interesting side fact.

This lesson has been an overview on the structure and function of hemoglobin.