All right. Hello out there. In this lesson today we are going to be discussing the endoplasmic reticulum. We will examine its structure and function in a cell.

So the endoplasmic reticulum is an organelle that is found in eukaryotic cells. And if you'll remember from previous lessons, eukaryotic cells are cells that have a nucleus. So our cells, for example, are eukaryotic cells. So an endoplasmic reticulum is an organelle that would be found in our cells.

If we were to think of the cell as a factory and think of the organelles as different parts of the factory, the endoplasmic reticulum would be like a packager perhaps. So it's like a highway for materials where materials are moving through this endoplasmic reticulum and getting ready to get packaged and sent off to other parts of the cells.

So the endoplasmic reticulum also works closely with another organelle called the Golgi body or the Golgi apparatus, which you'll learn about in a different lesson. But they help to prep materials, get them ready, and get them packaged to be sent out to different parts of the cell.

So the endoplasmic reticulum's role is to synthesize and package proteins and lipids in the cell. And there are two parts of the endoplasmic reticulum. We have the smooth and the rough endoplasmic reticulum.

And you'll often see endoplasmic reticulum abbreviated as ER. So when you see ER just know that we're talking about the endoplasmic reticulum.

And the endoplasmic reticulum is part of the endomembrane system. And this endomembrane system is a system that makes lipids, modifies proteins, and helps to package those molecules that will be sent out to different parts of the cell wherever they're needed.

And the endomembrane system includes the endoplasmic reticulum and the Golgi apparatus. So, again, the Golgi apparatus-- or the Golgi body as it's sometimes called-- will be discussed in another lesson.

All right. So we're going to take a look at the structure of the endoplasmic reticulum. And I'm going to zoom in just a little bit so we can see this a little better. OK.

So this is just a sketch that I did of the endoplasmic reticulum. And basically the endoplasmic reticulum starts at the nuclear envelope. So this blue thing right here is the nucleus.

And then surrounding the nucleus we have the nuclear envelope. And that's where the endoplasmic reticulum begins. All right.

So we have the rough ER first. That's attached to the nuclear envelope. So that's all this part in yellow is our rough ER. And the reason that we call it rough ER is because it has ribosomes attached to it.

So these little dots all over the place are ribosomes. And because those ribosomes are attached to it, it gives it a rough look. So that's why we call it the rough ER or the rough endoplasmic reticulum.

The rough endoplasmic reticulum. What happens in this part of the endoplasmic reticulum are that newly formed polypeptide chains will enter this part of the endoplasmic reticulum, and then side chains will be added on to them to help complete that protein.

Let's see. We're going to talk a little bit about ribosomes. So ribosomes, basically their function is to build proteins. And proteins that are built by ribosomes can have many different roles. They can act enzymes. They can take place in the production of hormones and regulate hormones, regulate different cell functions. So there's many, many, many different purposes for proteins in the body. And those proteins are formed by ribosomes.

So you'll see right here the ribosomes are on the rough ER. But ribosomes can also be found floating around in the cytoplasm. They don't always have to be attached to the endoplasmic reticulum.

And the parts of ribosomes. Ribosomes are made up of two subunits. The parts of those ribosomes are made in the nucleus.

All right. We're going to talk a little bit about the smooth ER right now. So the part in pink here is our smooth ER or our smooth endoplasmic reticulum. So the smooth ER is called the smooth ER because it does not have any ribosomes attached to it. So therefore it has more of a smooth look to it.

So the names of the different parts of the ER are fairly easy to remember. Rough and smooth, depending on if they have ribosomes attached or not.

And the smooth endoplasmic reticulum's job is to assemble lipids. So lipids or fats are assembled in this part of the smooth endoplasmic reticulum.

All right. So this lesson has been an overview on the structure and function of the endoplasmic reticulum.