Welcome to this lesson today on organ transplants.

Today we're going to be taking a look at how the immune system can react to an organ being transplanted in the body.

Organ transplant is a common practice in the medical field, and can involve the transplant of various different types of body organs. But sometimes these organs are rejected by the body when they're transplanted from one person to another.

The reason that these organs are sometimes rejected is because of cytotoxic T cells. Cytotoxic T cells can cause the rejection of an organ, because basically what happens is that they will notice that the cells of that organ may not have the proper MHC markers on them. And therefore, they will attack the cells of that organ.

MHC markers are markers found on our cells, that mark the cell as "self," so that our immune system knows not to attack it. But when an organ is transplanted, sometimes those MHC markers won't match, and cytotoxic T cells will recognize that, and then cause those cells to become attacked. Thus, having your body reject that transplant.

To give you an idea of how that works, let's pretend that this is one of your body cells. And your body cells have these markers on it. And we're going to say that these are the MHC markers. MHC. OK, so that's the MHC marker right there. Those are specific to the cells in your body. But if an organ is transplanted into your body, and let's say it has a MHC marker that isn't the same, or doesn't quite match up, the cytotoxic T cells will then cause your immune system to attack that organ and the cells of that organ, again causing rejection. So MHC cells are specific to the person, but sometimes one person's MHC cells can be similar enough to another person's that the body won't really recognize it as that different of a cell, and it will be accepted.

Some steps that are taken before a transplant can be important in making sure that the transplant is accepted. So before transplantation, the MHC markers of the organ are analyzed to see how closely they will match the recipient's MHC markers. Generally close relatives will have the best match, and therefore, are less likely to be rejected by the body, because their MHC markers will be close enough to the recipients that the body will accept it.

Also some precautionary steps that need to be taken are blood typing. So the blood types of the donor and recipient must also be compatible, because agglutination will happen if they are not. So if you're mixing two blood types that are incompatible, it will cause the blood to clot, and blood cells to burst, and can cause death or be very, very dangerous. So the blood types need to also be compatible, in addition to making sure that the MHC

markers are as close of a match as possible.

And then also post surgery, drugs are generally given to the recipient. These drugs will suppress the immune system so that it does not respond to the new organ. So it's suppressing the immune system, making sure that cells of the immune system are not attacking the cells of this new foreign organ, and allowing the body to acclimate to this new organ and accept it. So these are things that happen before and after the transplant to assure that the body will accept the organ.

This lesson has been an overview on organ transplants.