

I NEED TO KNOW ABOUT HLA

BEN SAXON

What is HLA?

HLA stands for Human Leucocyte Antigen. HLA are collections of proteins on the surface of cells. These proteins are called “antigens”. These were originally found on a certain type of cell in our blood, the white cells, or “leucocytes”. We now know they are on most cells in our body.

Why do we have HLA?

HLA is really important for the correct function of our immune system. They are also very important in order for our body to recognise itself.

What is self-recognition?

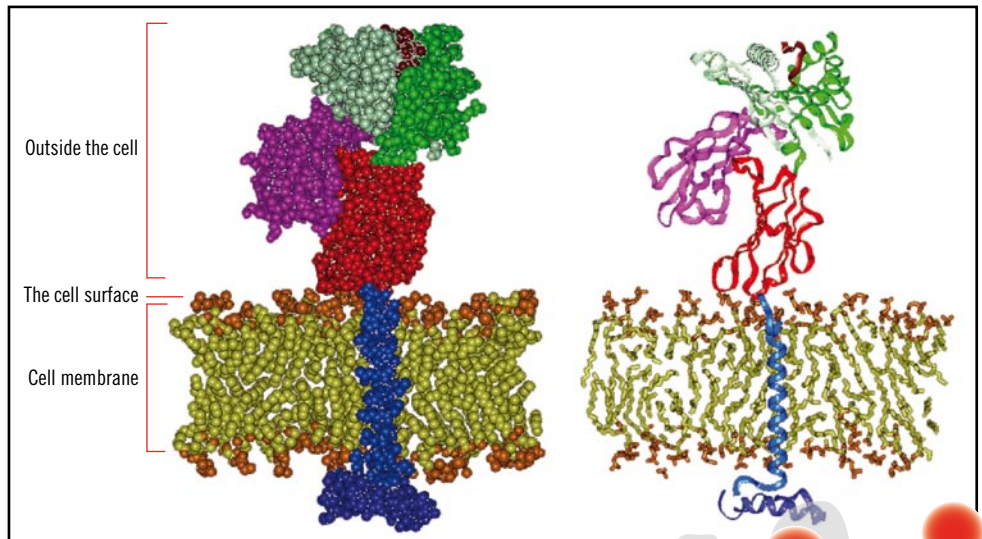
Our body needs ways to identify what is friendly and what is foreign or a threat. Our immune system will kill anything that is not welcome. We don't want our immune system thinking normal liver cells or cartilage cells are bad! HLA are an important part of this self-recognition process.

What happens if self-recognition does not work?

There is a risk that the immune system will think normal cells and proteins are foreign and mount an attack. Diseases caused by this process are called “auto-immune” diseases. Common examples are Rheumatoid Arthritis and Coeliac Disease.

How many HLA types are there?

Plenty! To try to ensure our own self looks different to other people, there are lots of different HLA types. For ease of identification, they are grouped into two “classes”: Class I and Class II. Within each class there are several different sub-types (eg HLA-A, HLA-B, HLA-C are all Class I antigens). Each individual will have two of each of these sub-types (eg someone may have HLA-A2 and A36).



Above: HLA molecules are complex and are located on the surface of our cells. Source: <http://www.cryst.bbk.ac.uk/pp97/assignments/projects/coadwell/MHCSTFU1.HTM>

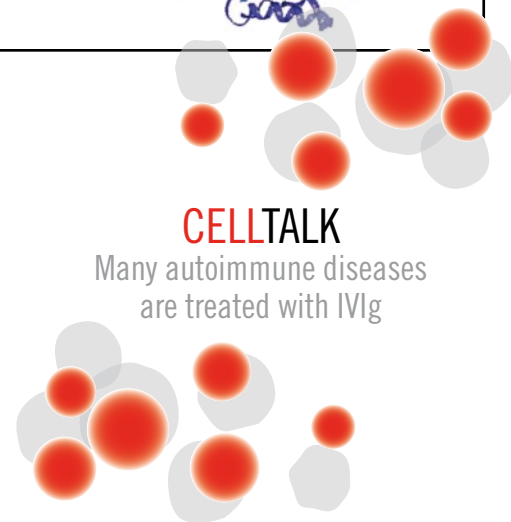
Why are there two HLA classes?

The two classes work in different ways to help protect us from foreign antigens (eg proteins from a virus).

What do HLA do for us?

Here is one way HLA Class II helps us: When a virus attacks us, some special cells called antigen-presenting (AP) cells eat a few viruses. These AP cells then take some virus protein and display it on their cell surface. HLA Class II are needed for this display. The immune system recognises these virus proteins as foreign because they are held there by HLA Class II. Essentially HLA Class II is the flagpole used to warn the immune system of a new danger.

Here is one way HLA Class I helps us: When one of our cells gets infected by a virus, it wants the immune system to find it. The infected cell gets filled with virus and needs



CELLTALK

Many autoimmune diseases are treated with IVIg

to be destroyed. To raise the alarm, the cell takes some of the virus protein and displays it on the outside of the cell. The only way this can be done is with HLA Class I. Essentially HLA Class I is a warning beacon of a sick cell.

Why do I need to know this?

HLA is extremely important for tissue typing. For more about this, see the iTRANSPLANT fact sheet *I Need to Know About Tissue Typing*, Vol 3, No 2).

The information contained in this fact sheet is not intended to be medical or professional advice. The disclaimer found at transfusion.com.au applies to this fact sheet.

For more information visit
transfusion.com.au

 Australian Red Cross
BLOOD SERVICE