Basics of Blood Transfusion: Antibodies & Antigens

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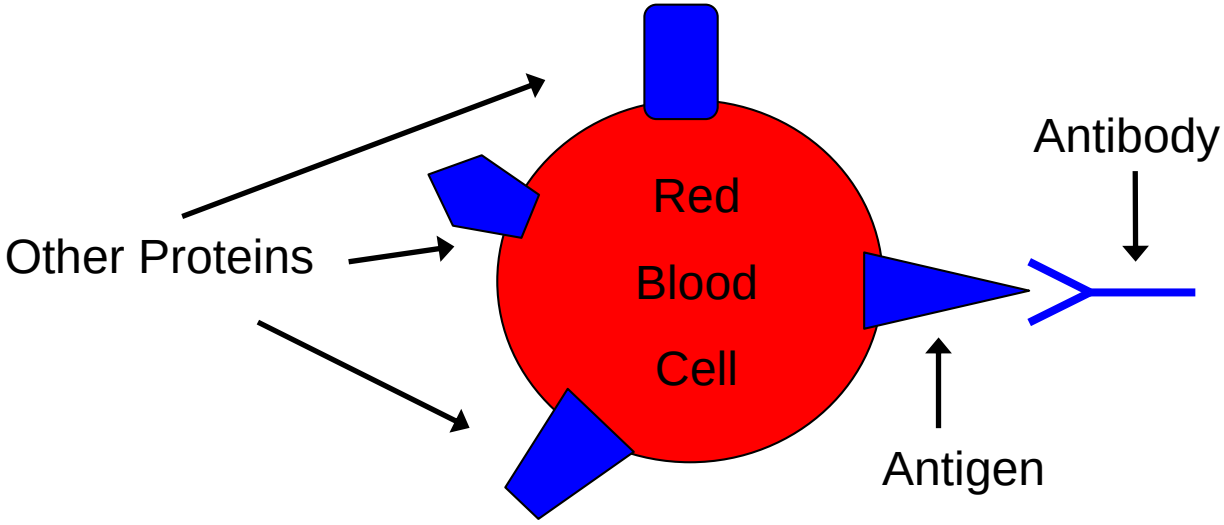
What is on the red cell...

- Lots and lots of different proteins!
- If there is an antibody that can attach to the protein we call it an antigen



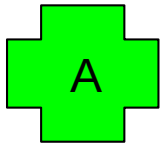
ABO Group

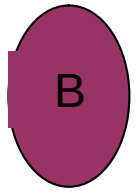
- ABO is the most important group of antibodies
- They cause life threatening transfusion reactions

There are two different antigens: A and B

There is no ‘O’ antigen!

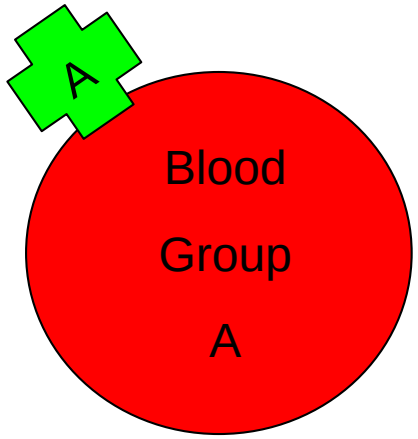
‘O’ just means no A or B are present



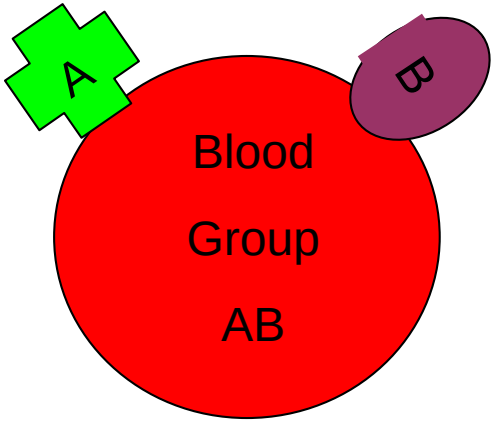


ABO Blood Groups

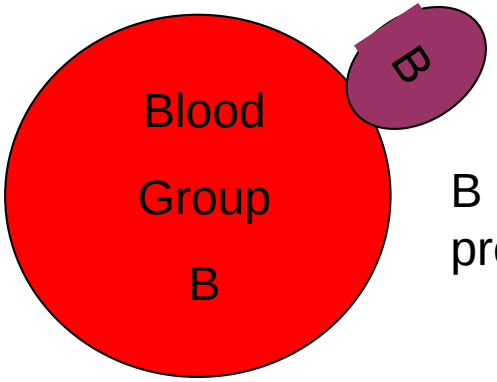
There are four different ABO Blood Groups



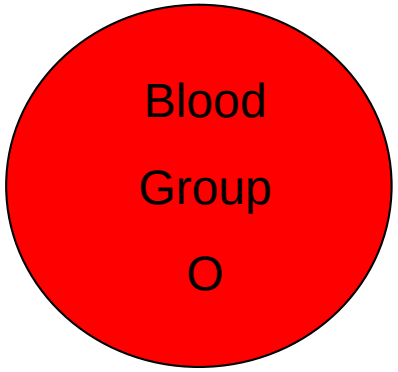
A antigens present



A & B antigens present



B antigens present



No A or B antigens present

Remember!

There are lots and lots and lots of other antigens on red cells!

- We focus initially on ABO because they are so important
- A cross-match is needed to ensure blood is compatible against all the antigens it contains

Transfused Blood Components

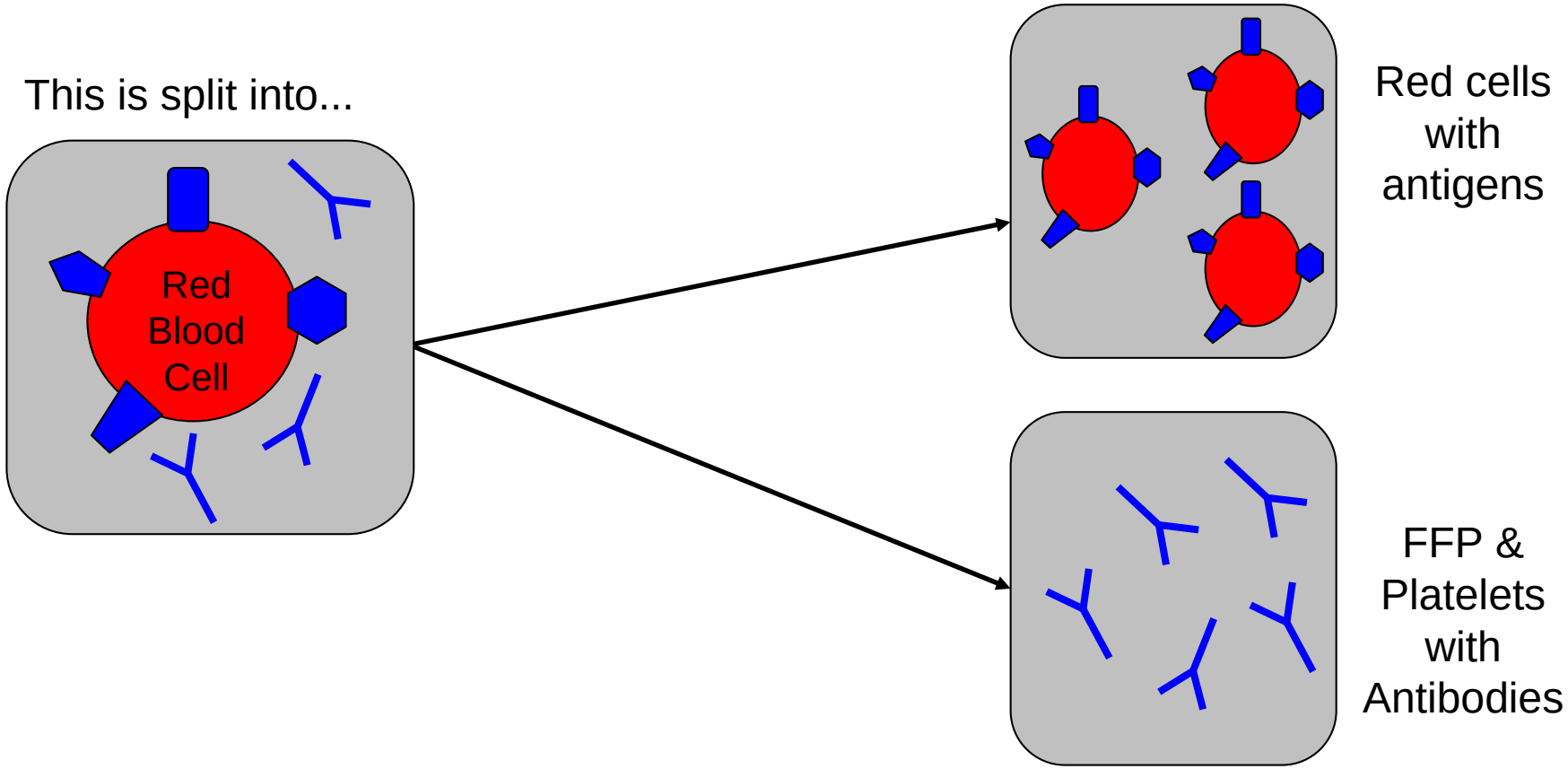
We don’t give ‘Blood’ we give parts of it

1. Red cells
2. Plasma
3. Platelets

What is in each component?

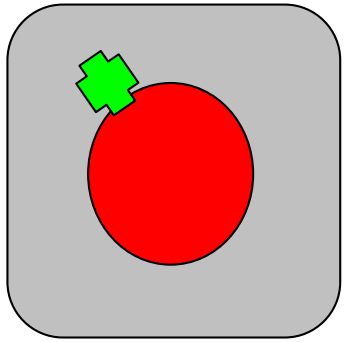
Donated blood contains:

1. Red blood cells with lots of antigens
2. Antibodies that do not react with those cells

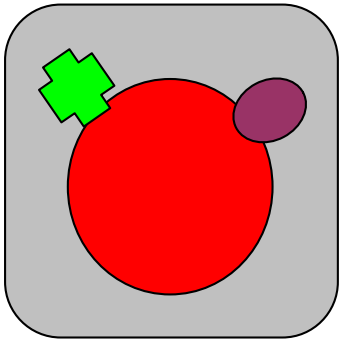


Transfusing Red Cells

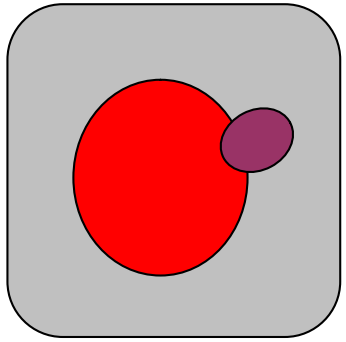
If we give Donated Red Cells we are giving Red Cells with that Donors Antigens



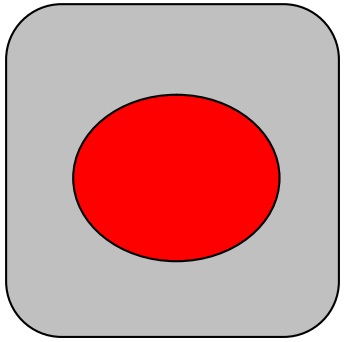
Donor Group A has A antigen



Donor Group AB has A & B antigens



Donor Group B has B antigen

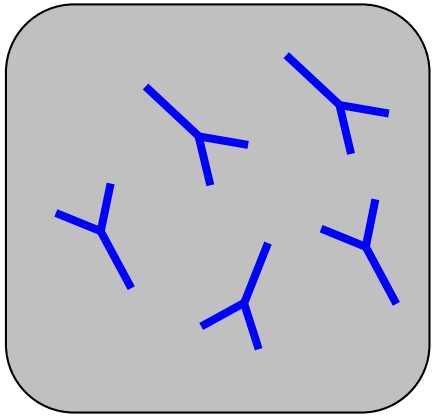


Donor Group O has no A or B antigens

Transfusing FFP & Platelets

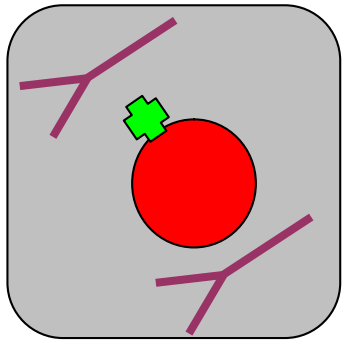
Both FFP and Platelets contain plasma

- They do not contain red cells
- They contain antibodies

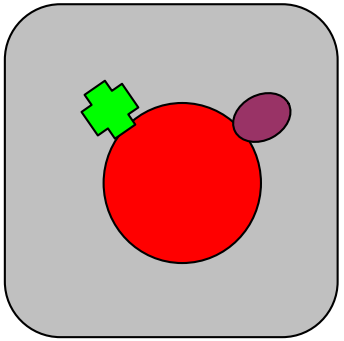


Which Antibodies?

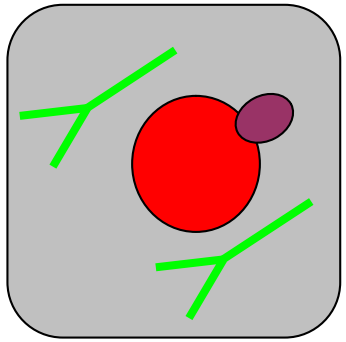
We make antibodies to antigens we do not know



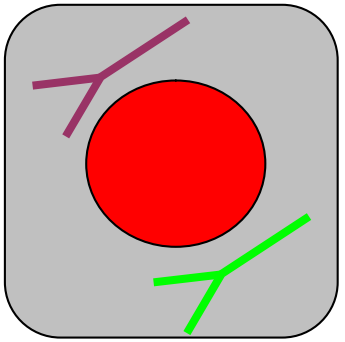
Group A
make B
antibodies



Group AB
make
no A & no B
antibodies



Group B
make A
antibodies



Group O
make A & B
antibodies

Why do we make ABO antibodies?

A and B antigens occur outside the body

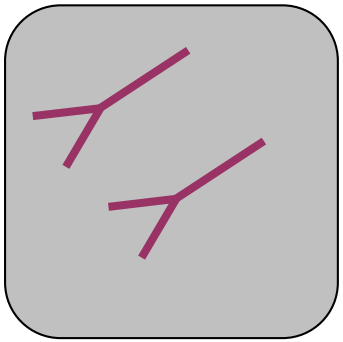
It is thought that through bacteria in the gut our body ‘sees’ them and makes an antibody if it isn’t on the body’s red cells

Babies usually have a full amount of these antibodies by 1 year of age

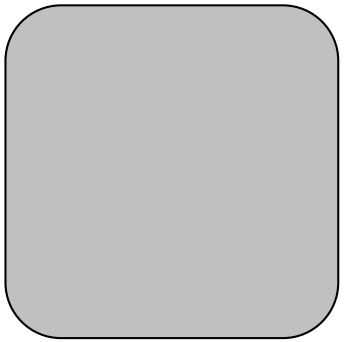
Transfusing FFP & Platelets

Donated FFP & Platelets have antibodies to the antigens

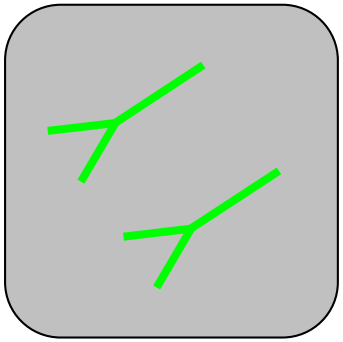
that are **not** present in the donor



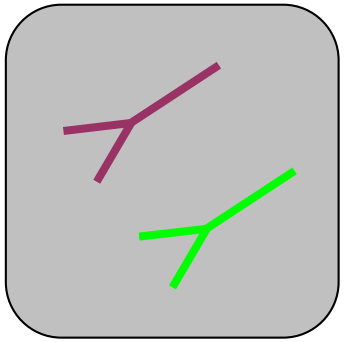
Donor Group
A has
B antibodies



Donor Group
AB has
No antibodies



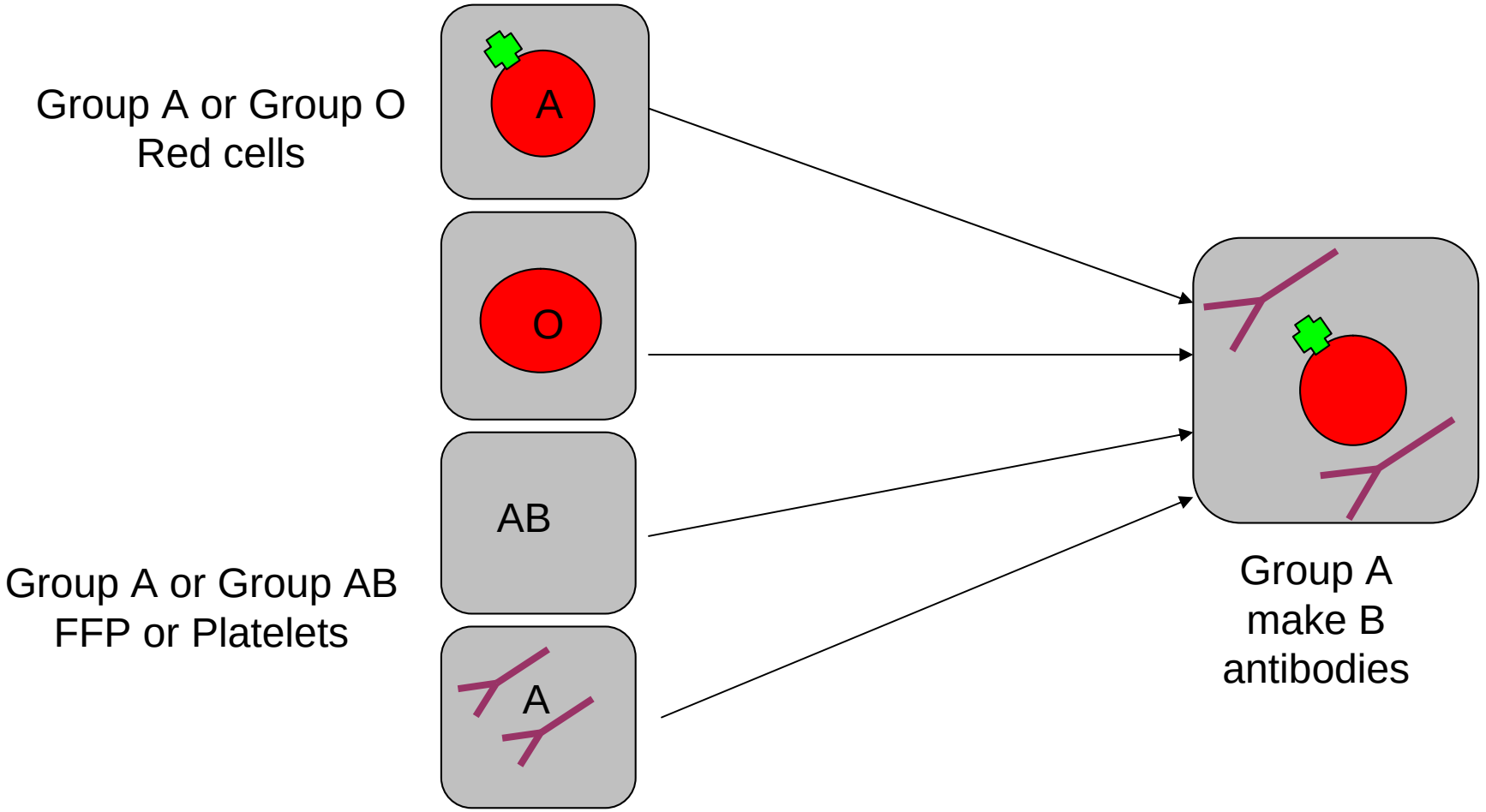
Donor Group
B has
A antibodies



Donor Group
O has
A & B
antibodies

This means...

If you had a group A patient you could give



The End