

# **Red cell antibodies explained**

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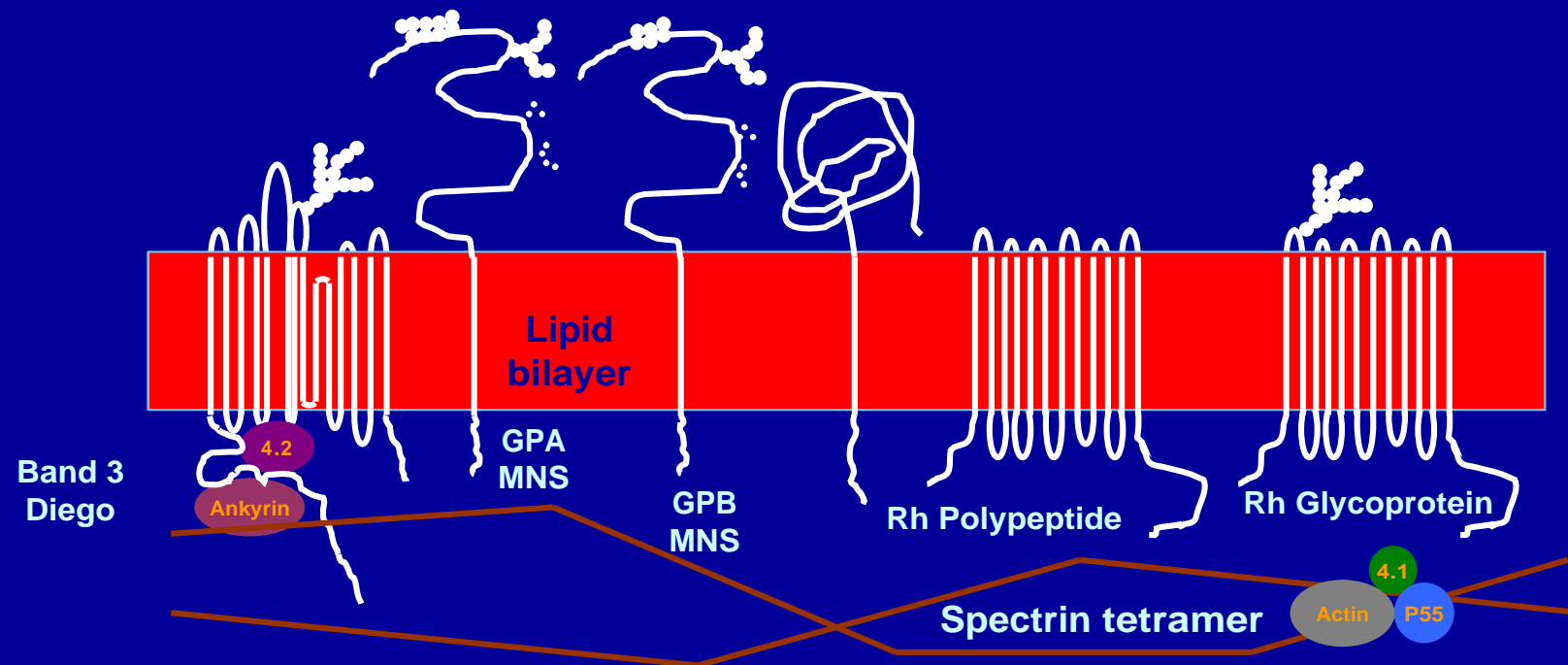
# To cover:

- What is a red cell antigen?
- What is a red cell antibody?
- What do they mean for blood provision?

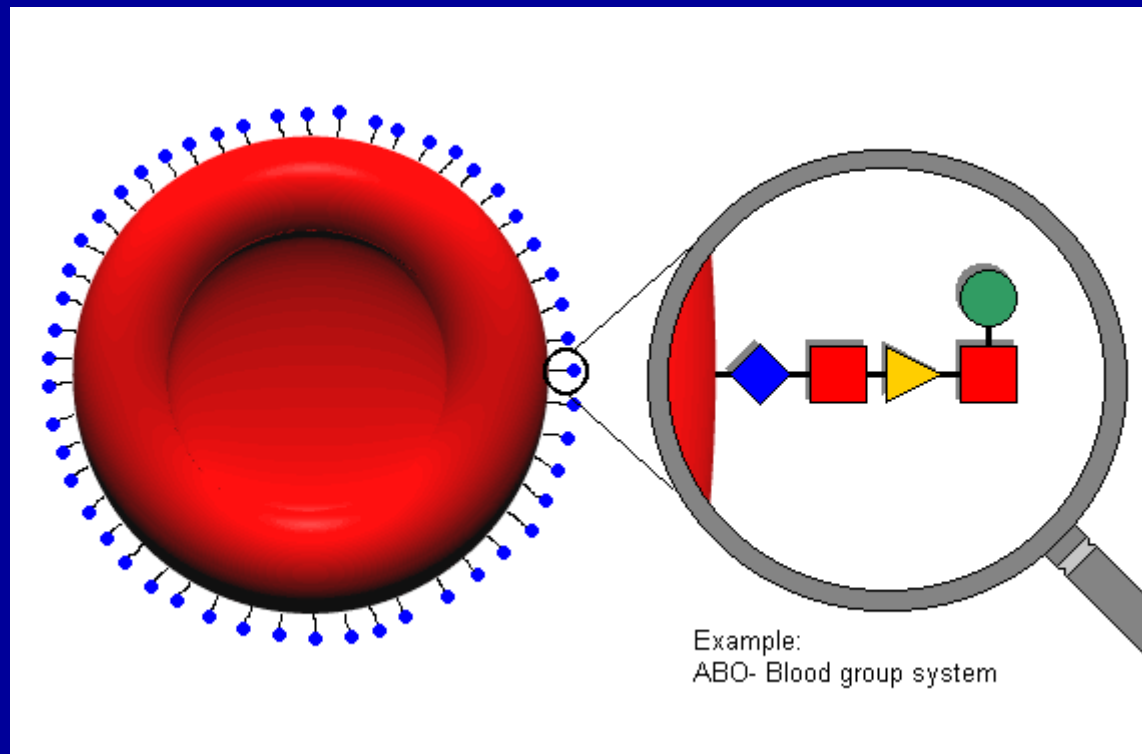
# An Antigen

- An antigen can be defined as a substance that, when introduced into the circulation of an individual lacking that antigen, can stimulate the production of a specific antibody.
- Red cell antigens

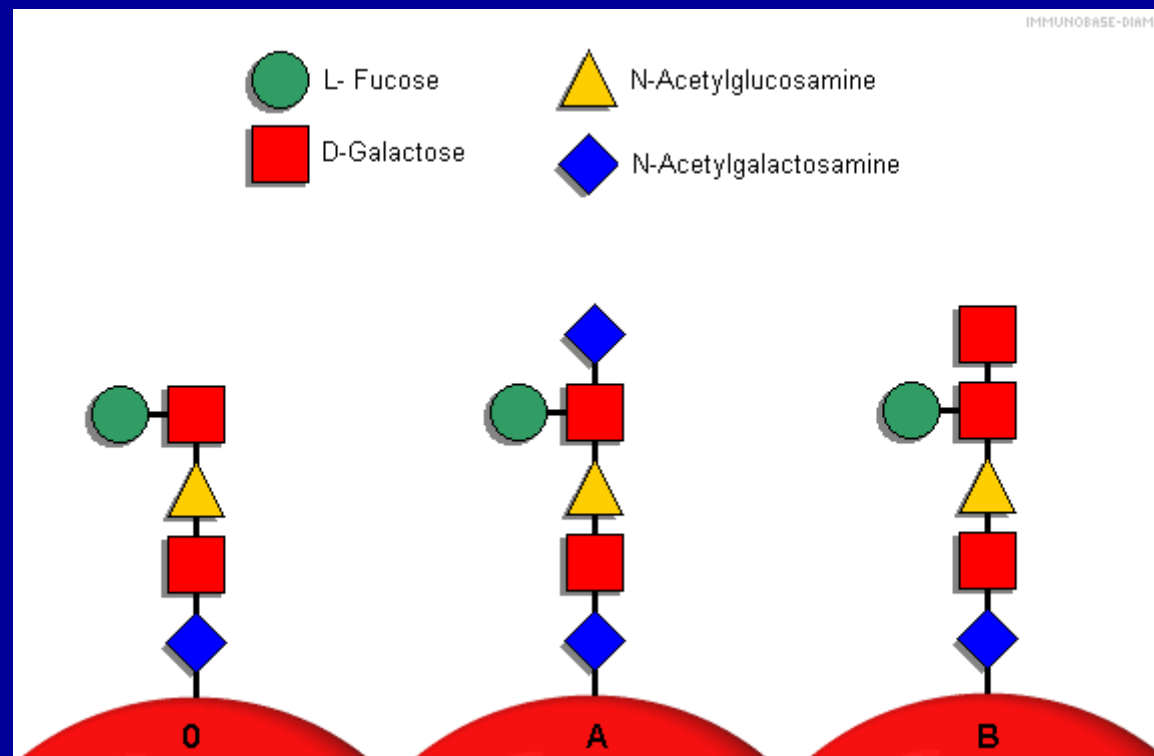
# Blood Group Antigens



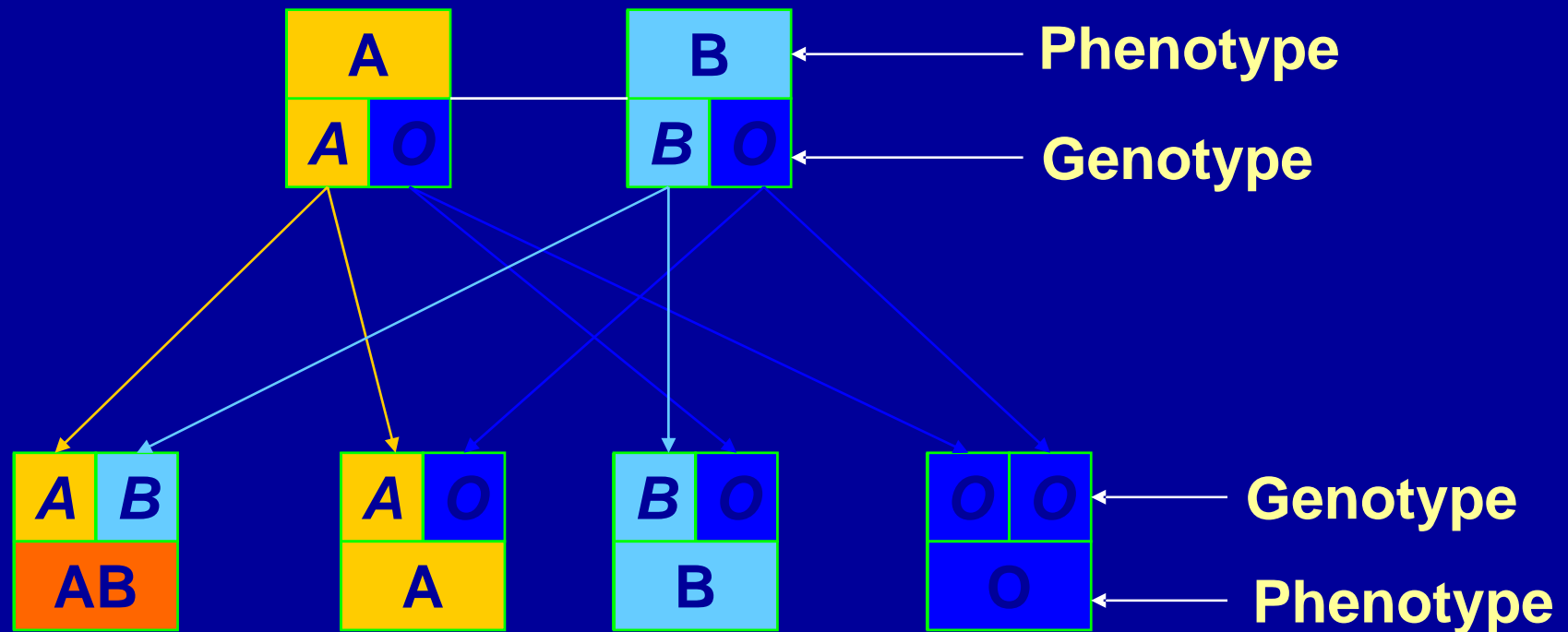
# ABO Antigens



# A Close Up



# Inheritance



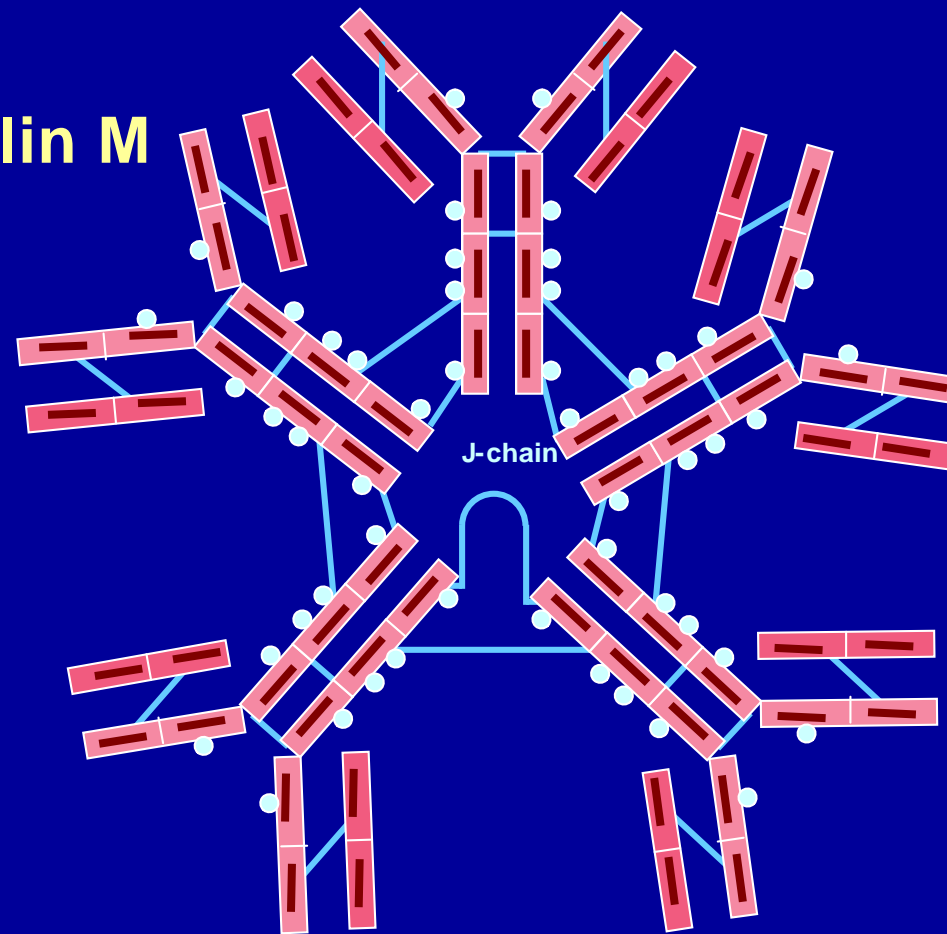
# An Antibody

- An antibody can be defined as a serum protein (*i.e.* an immunoglobulin with specific antigen binding sites) produced as a result of the introduction of a foreign antigen, that has the ability to combine with (and, in many cases, destroy) the cells carrying the antigen that stimulated its production



# Antibodies - IgM

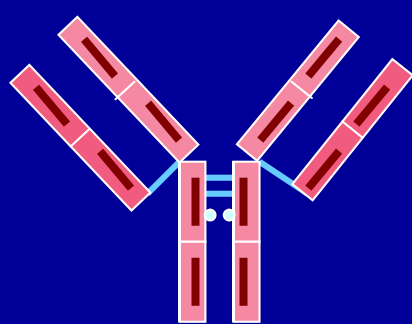
## Immunoglobulin M



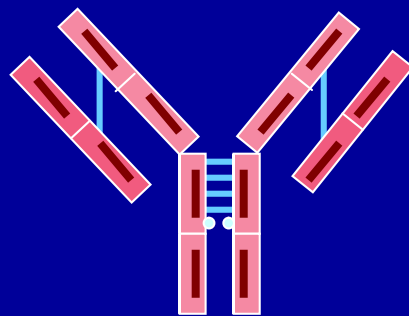
● Carbohydrate unit

# Antibodies - IgG

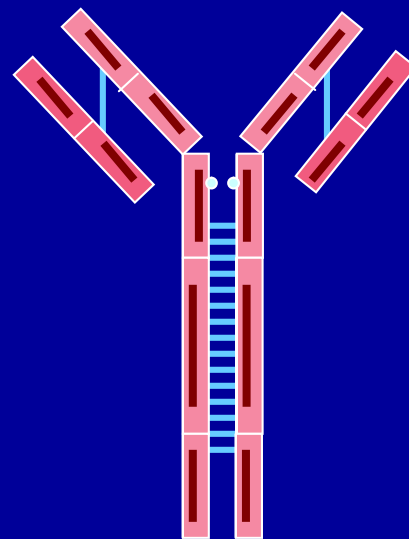
## Immunoglobulin IgG subclasses



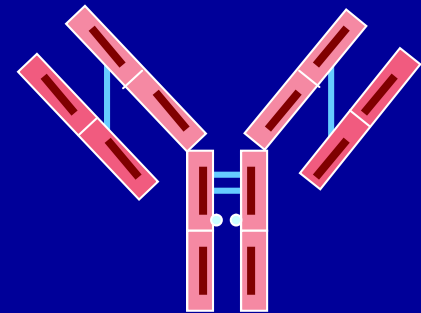
IgG1



IgG2



IgG3



IgG4

# Red Cell Antibodies

Produced when exposed to foreign blood:

- Previous transfusion of blood/components
- Fetal maternal haemorrhage during pregnancy or at delivery

# ABO System

Red Cells  
(Antigens)

- A
- B
- O
- AB

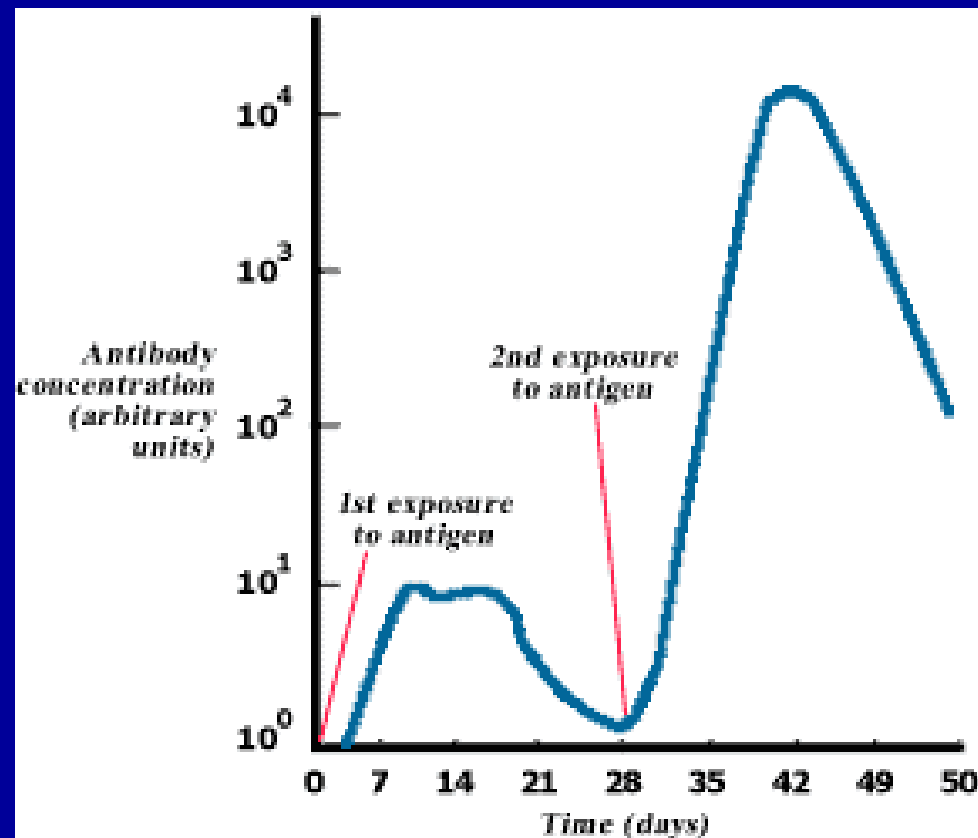
Plasma  
(Antibodies)

- Anti-B
- Anti-A
- Anti-A,B
- None

# Pre-transfusion compatibility testing

- Blood group – ABO and RhD
- Antibody screen

# Antibody production



# Pre-transfusion compatibility testing

- To ensure that the specimen used for compatibility testing is representative of the patient's current immune status testing should be performed using blood taken no more than 3 days in advance of the actual transfusion, when the patient has been transfused or pregnant in the preceding 3 months.

BCSH guidelines, Transfusion Medicine, 2013, 23, 3-35

# Pre-transfusion compatibility testing

- Blood group – ABO and RhD
- Antibody screen - no antibodies detected
- Issue blood



# Pre-transfusion compatibility testing

- Blood group – ABO and RhD
- Antibody screen – antibody detected
- Antibody identification
- Select blood
- Crossmatch

# Organisation / Communication

## Elective:

- Pre-op assessment clinics
- Informing laboratory of cancellations or changes of op dates

## Urgent:

- Good communication
- Involvement of haematologist