

Humoral immunity

Isotypes, Allotypes, Ideotypes

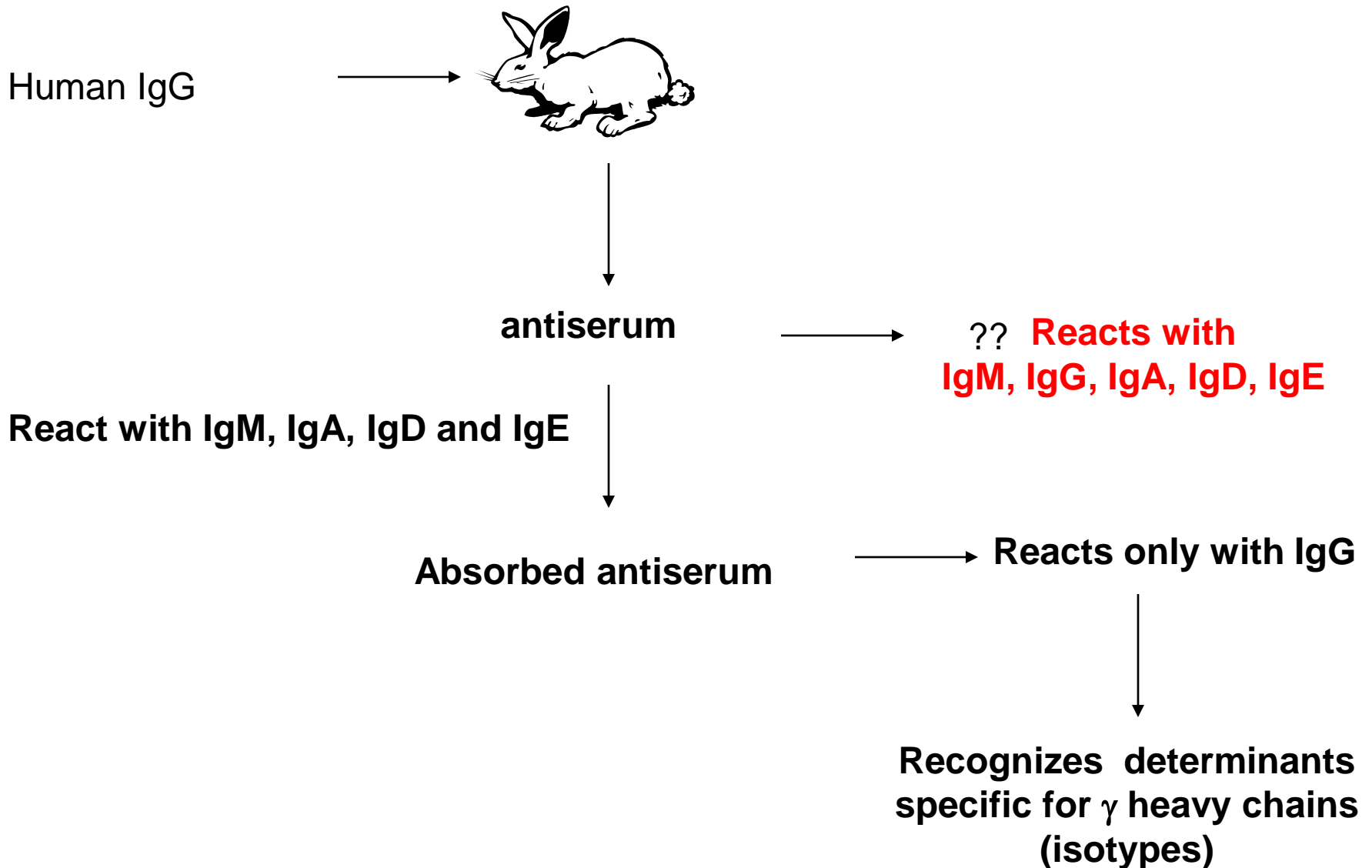
Immunoglobulin

- Immunoglobulins are proteins
- So they can have antigenic determinants
- There are 3 types of determinants one can find on immunoglobulins
 - Isotypic determinants
 - Allotypic determinants
 - Ideotypic determinants

Isotypes

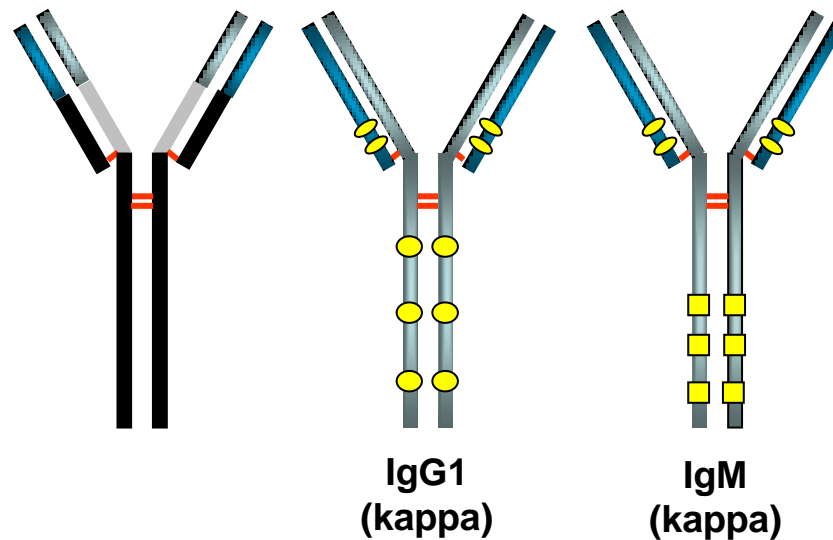
- **Isotypes**
 - Antigenic determinants that characterize the classes and subclasses of heavy chains and types and subtypes of light chains

Isotypes



Isotypes

- Isotypic determinants are located in the constant region of heavy chain



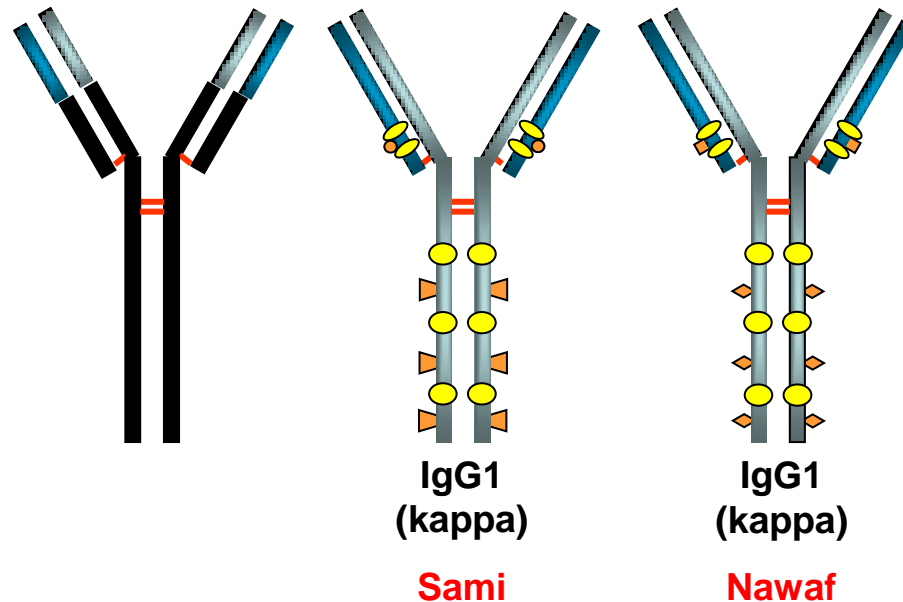
- Used in detection of B cell related cancers

Allotypes

- **Allotypes**
 - Antigenic determinants specified by allelic forms of Ig genes
 - We all have IgG
 - My IgG might be different from yours
 - There can be an amino acid change
- **Sources of anti allotypes**
 - During blood transfusions
 - During pregnant women delivery foetus blood mixes with mothers blood

Allotypes

- Location : theoretically can be anywhere
- Generally in C_H and C_L regions



- Used in Forensics, Paternity testing (disprove paternity)

Allotypes

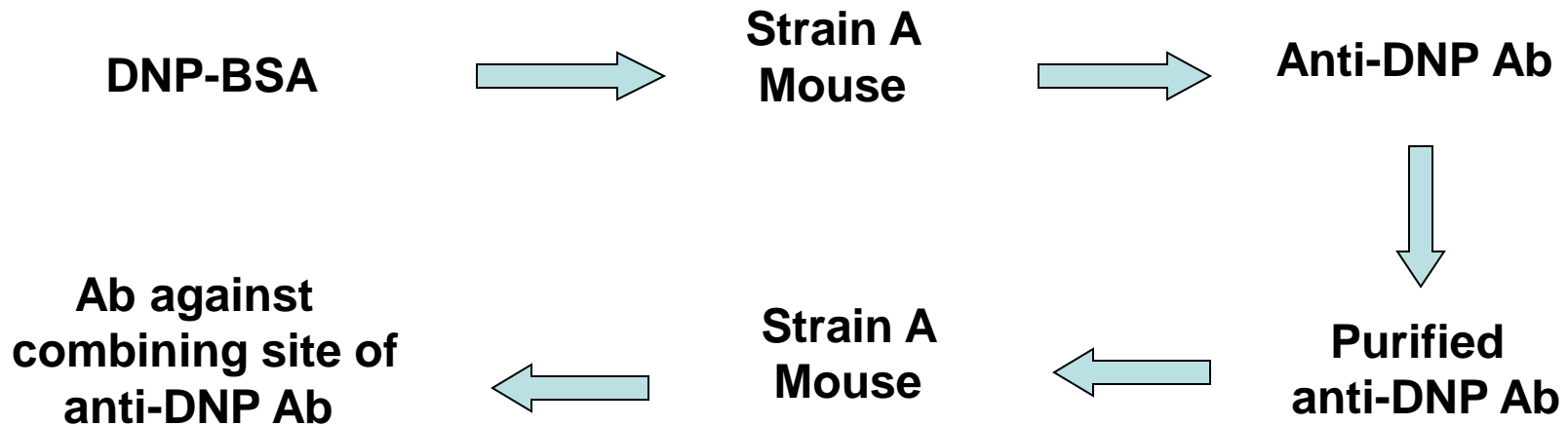
Chain	Domain	Allotype	Amino Acid	Position
IgG1	C_{H1}	G1m(f) = (3)	Arg	214
	C_{H1}	G1m(z) = (17)	Lys	214
	C_{H3}	G1m(a) = (1)	Arg, Asp, Glu, Leu	355-358
K light chain	C_L	Km(1)	Val, Leu	153, 191
	C_L	Km(3)	Ala, Val	153, 191

Ideotypes

- **Ideotypes**
 - Unique antigenic determinants present on individual antibody molecules or molecules of identical specificity

Ideotypes

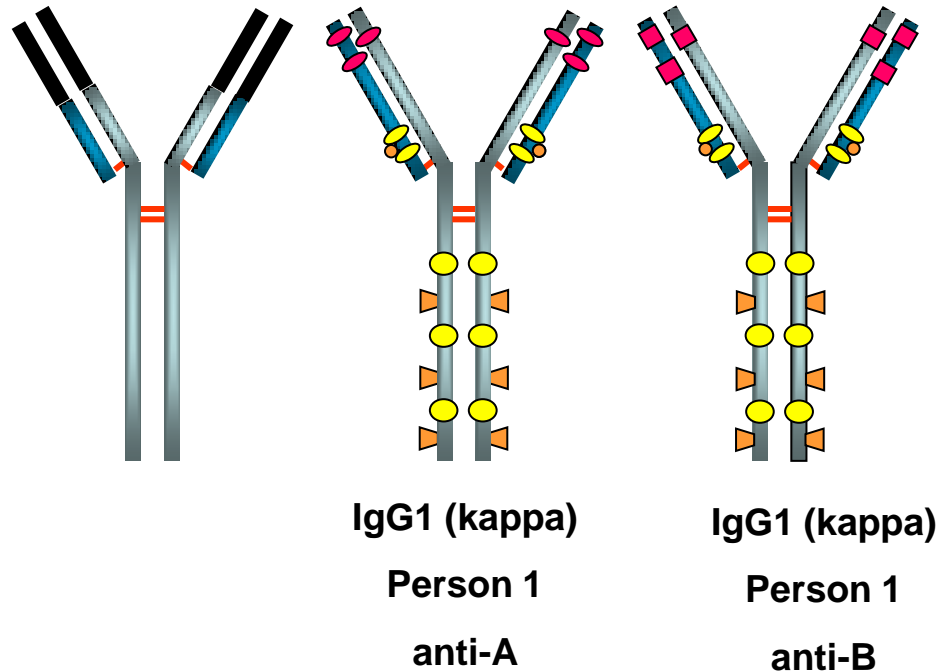
- Ideotypes



Antigenic
determinants created
by the HVR =
Idiotypes

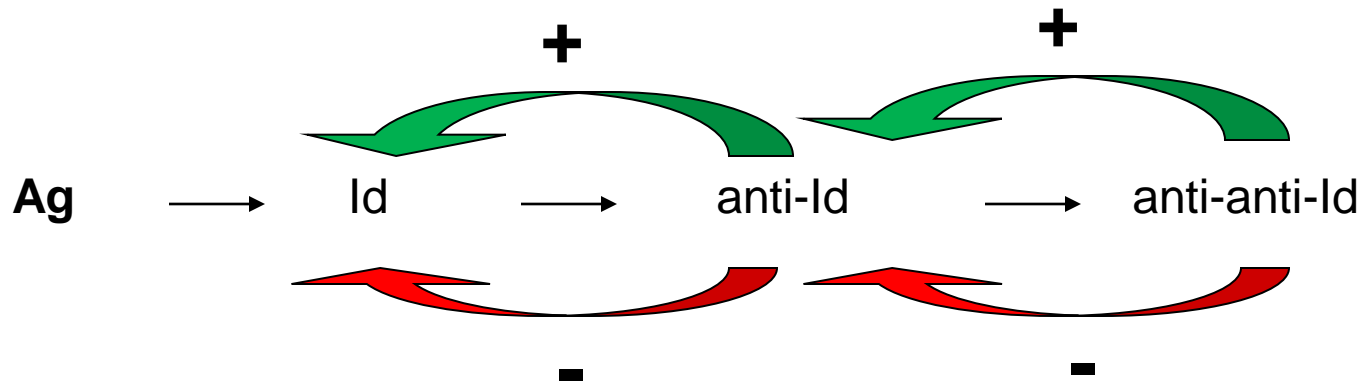
Ideotypes

- Ideotypic determinants are located in hyper variable region of Fab



- Useful in immune response

Anti-ideotypic network



- Experimentally 3 levels of anti-anti-anti ideotypes are demonstrated in mice
- **Anti-ideotypic vaccines (+ve regulated)**

Next class....

- Ig Biosynthesis
- Monoclonal antibodies