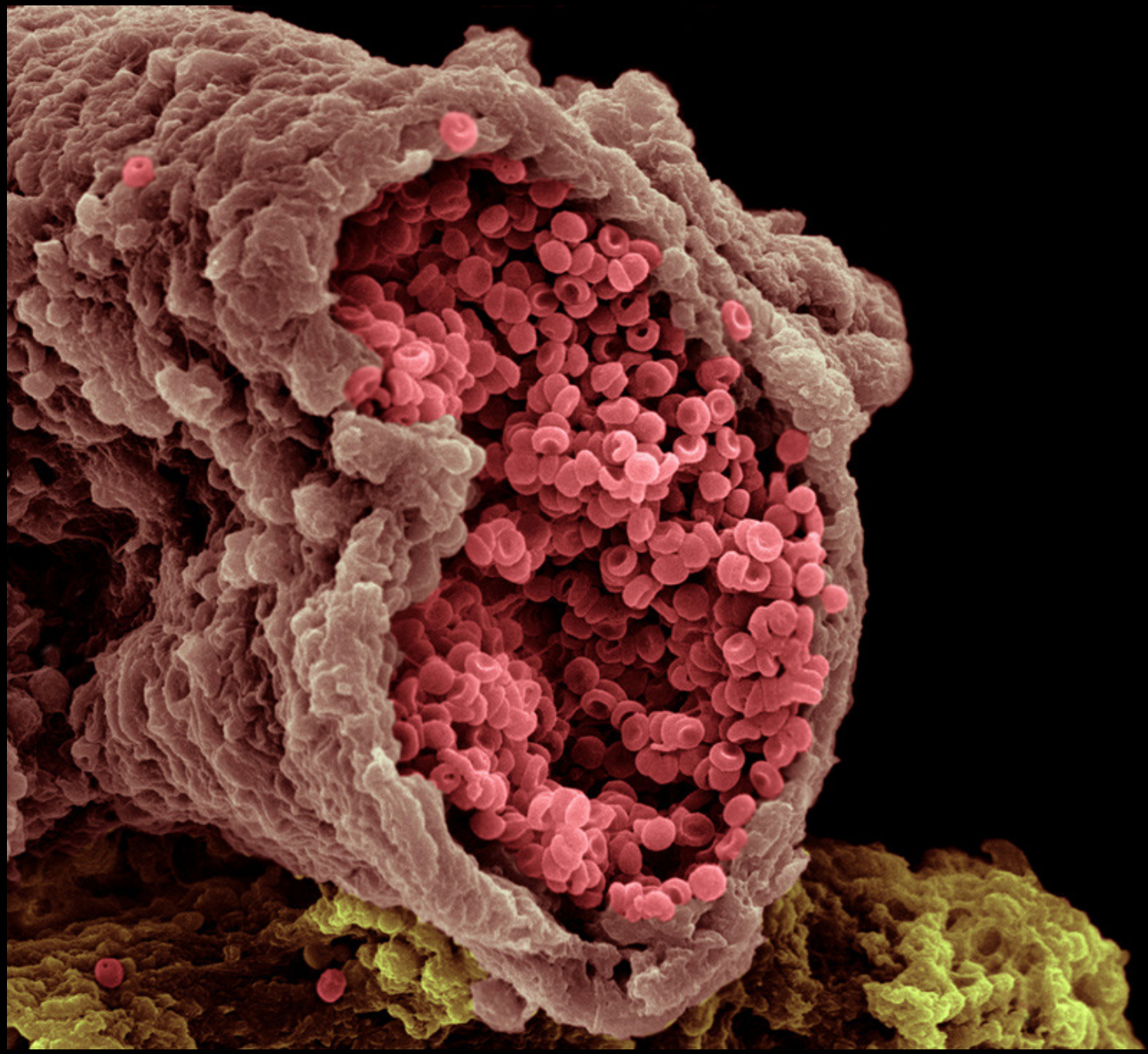
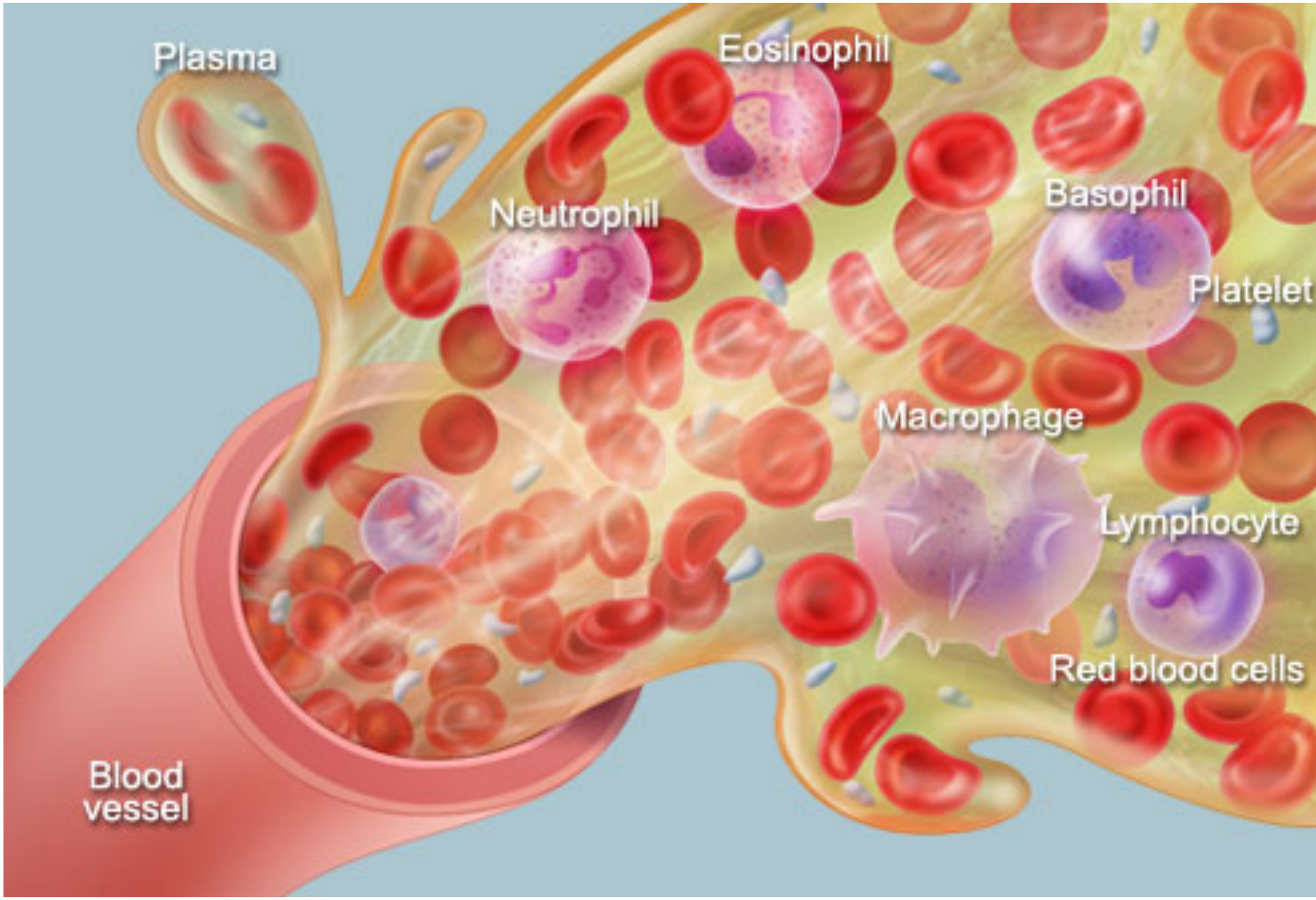
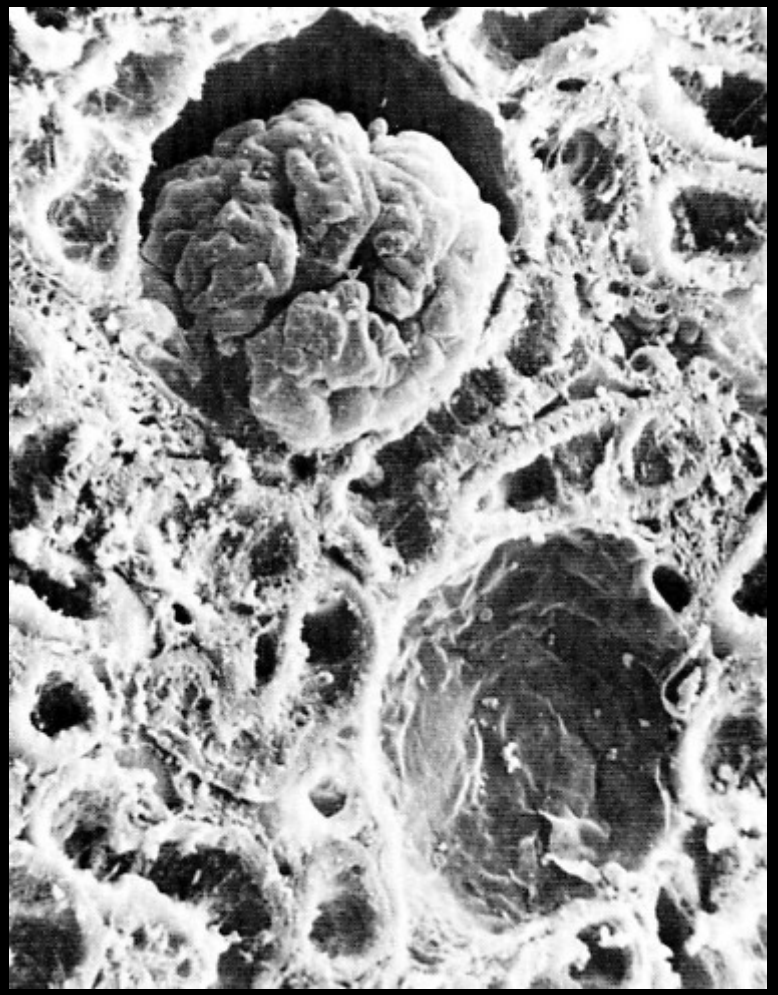
Kidneys

&

Kidney Transplants




Plasma
Eosinophil
Neutrophil
Basophil
Platelet
Macrophage
Lymphocyte
Red blood cells
Blood vessel

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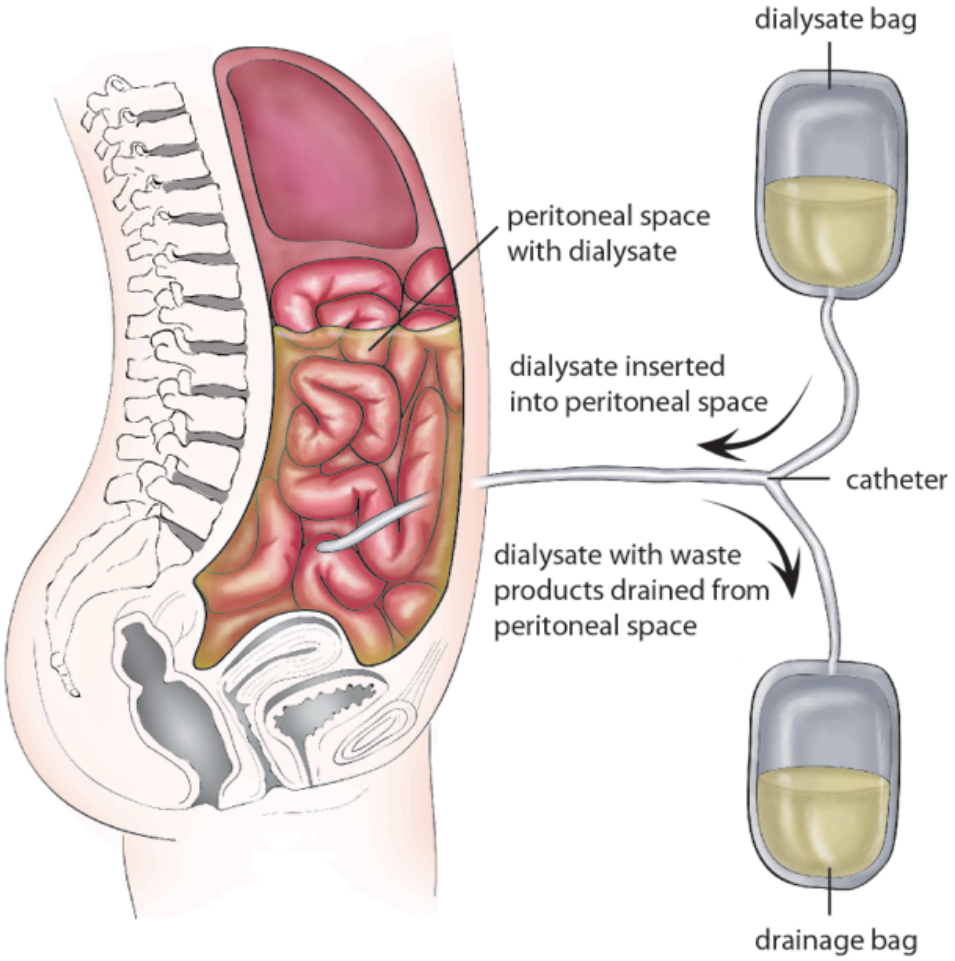
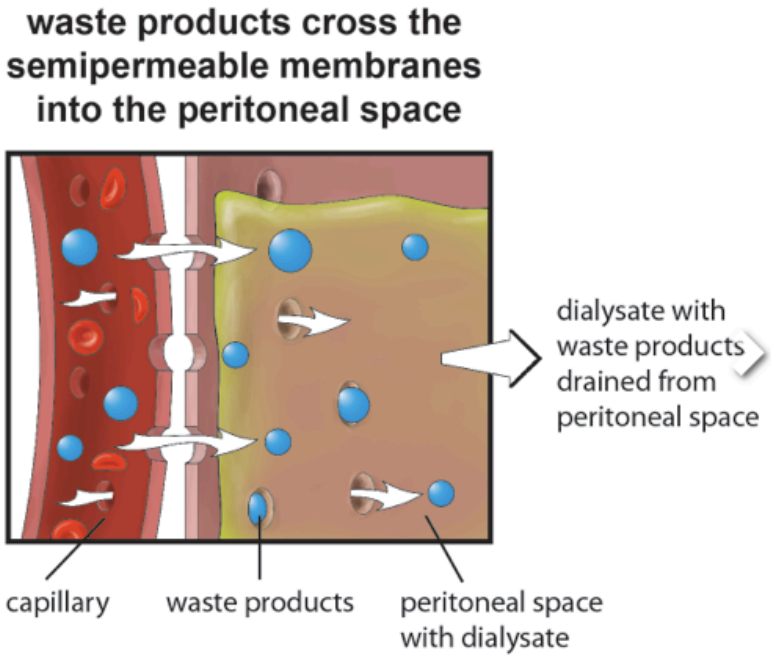
Dialysis

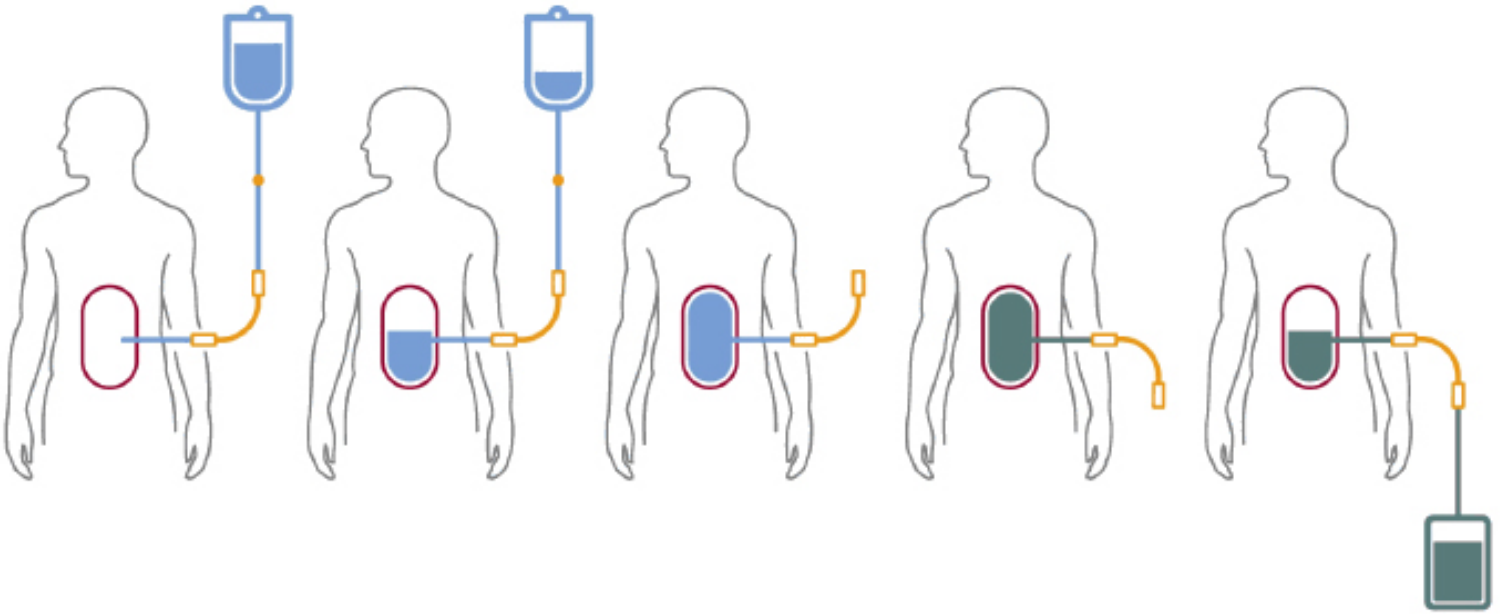
2 Types

Peritoneal Dialysis

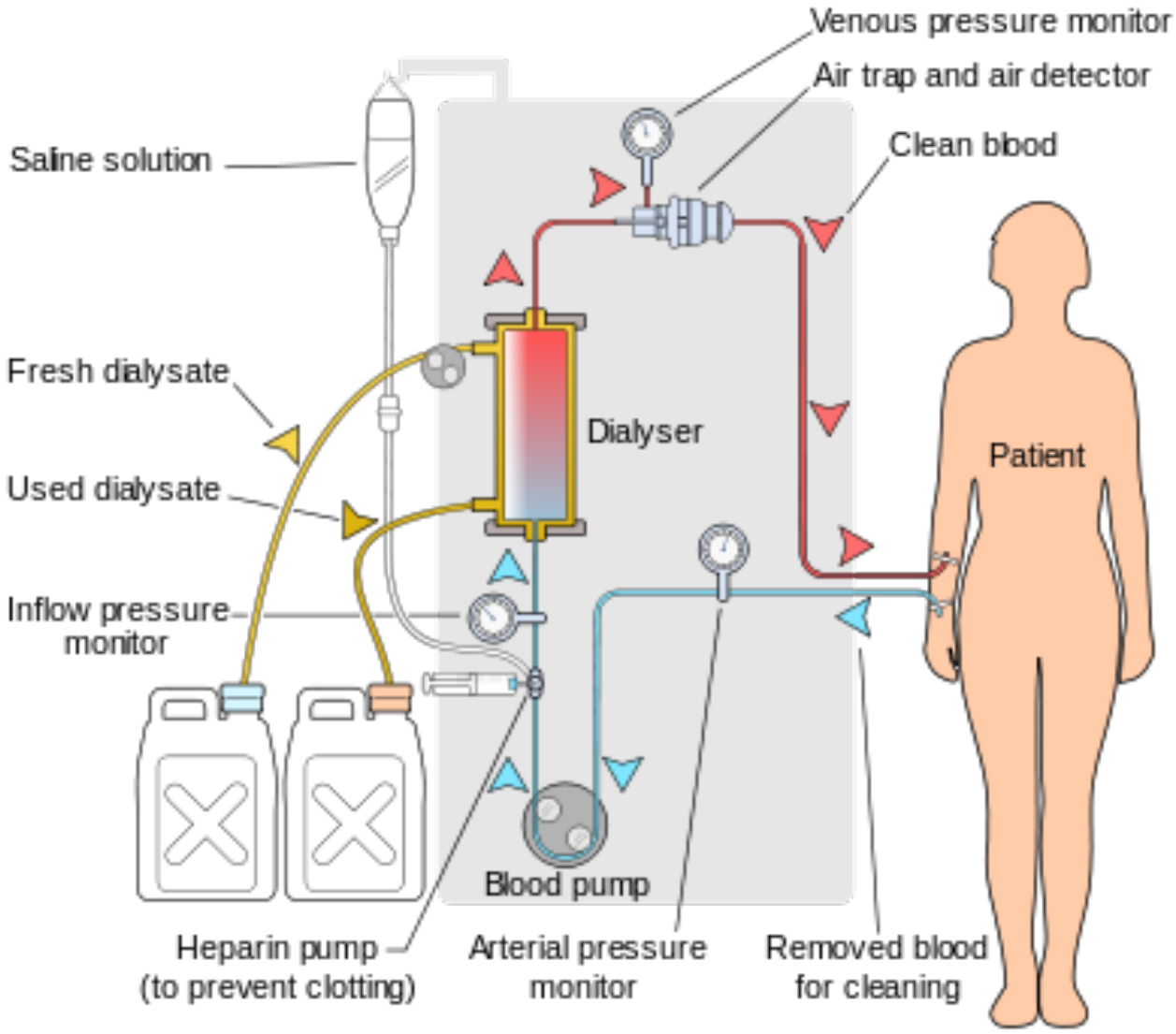




Peritoneal Dialysis



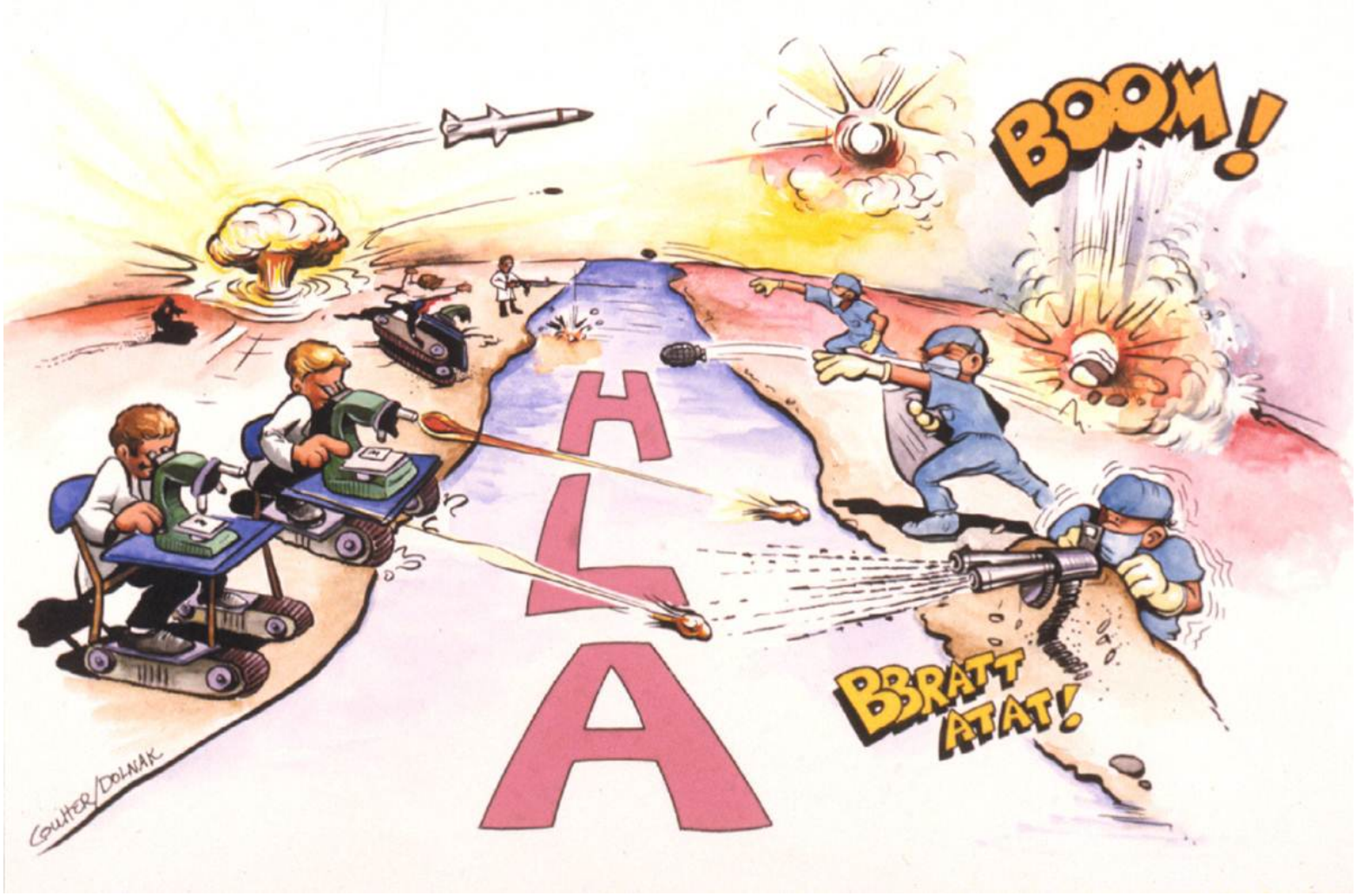
Hemodialysis




KEEP IN UPRIGHT POSITION
HUMAN
ORGAN
FOR
TRANSPLANT
HANDLE WITH CARE

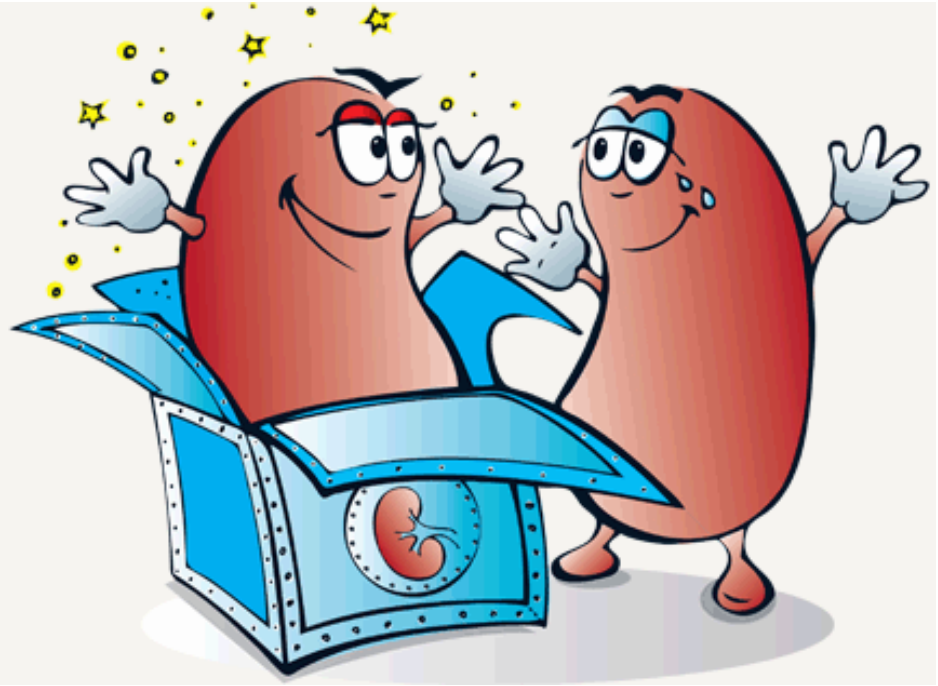
Why do transplanted organs get rejected?

You are not Compatible



3 Major Tests for Compatibility

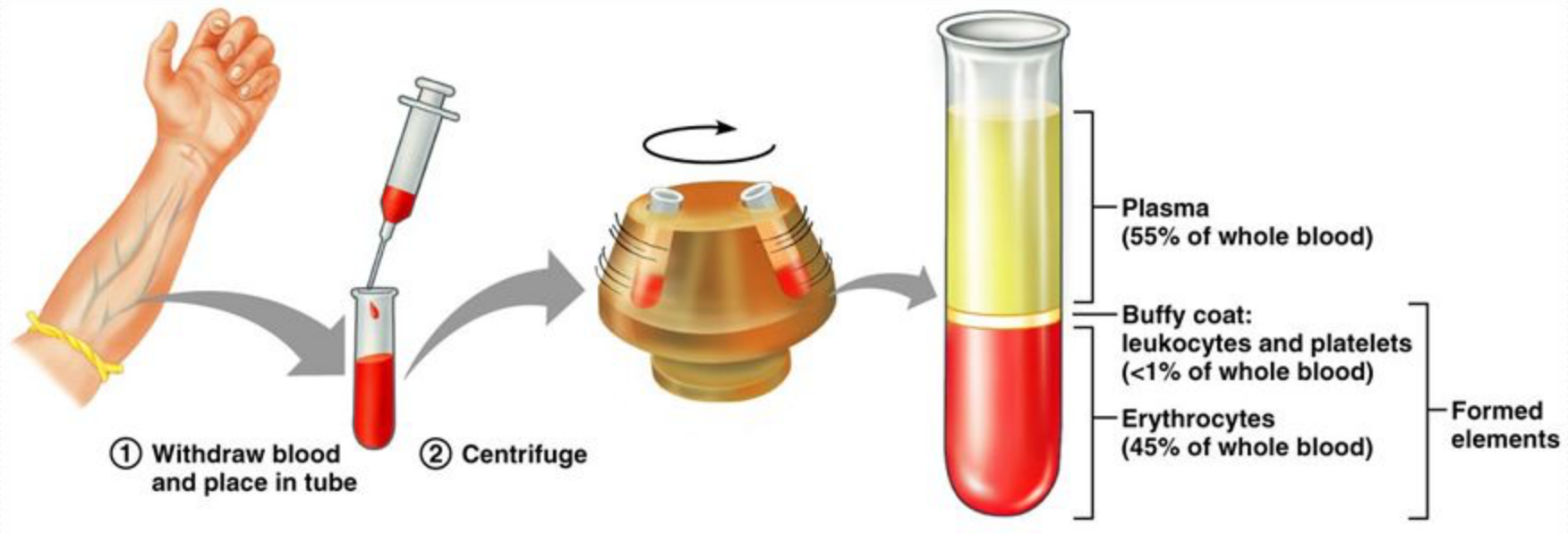
- Blood Type
- Tissue Typing
- Cross Matching



Blood Typing

- 4 Major Blood Types
  - Based on the antigens present on red blood cells
- A, B, AB, O
- We have antibodies for the blood types we DO NOT have
- If your blood types are not compatible, your immune system will recognize the kidney as a foreign substance & attack it

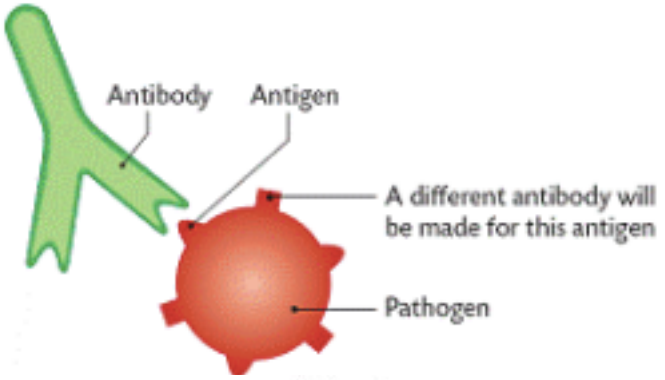
Components of Whole Blood

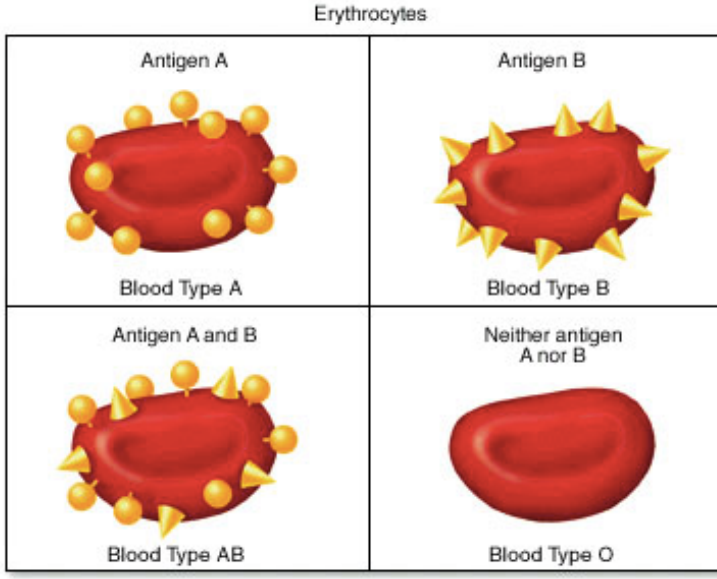


- **Hematocrit** – the percentage of RBCs out of the total blood volume

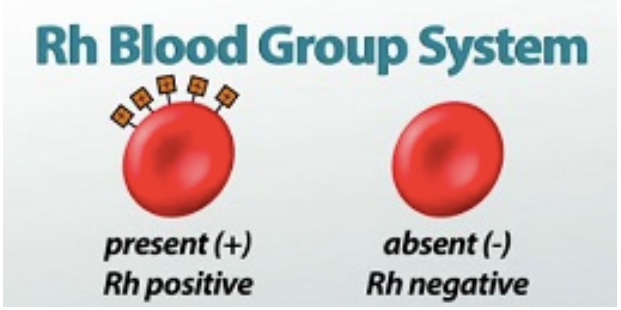
Figure 17.1

Blood Typing





- Antigen – substance that can trigger an immune response if foreign to body
- Antibody – molecule that recognizes a specific antigen & helps eliminates it
- Group A – has only the A antigen on red blood cells – B antibody in plasma
- Group B – has B antigen on red blood cells – A antibody in plasma
- Group AB – has both A and B antigens on red blood cells – neither A nor B antibody in plasma
- Group O – has neither A nor B antigens on red blood cells – Both A and B antibody in plasma
- Universal red blood cell donor? Universal plasma donor? Universal Recipient?
  - Type O blood -- Type AB blood -- Type AB



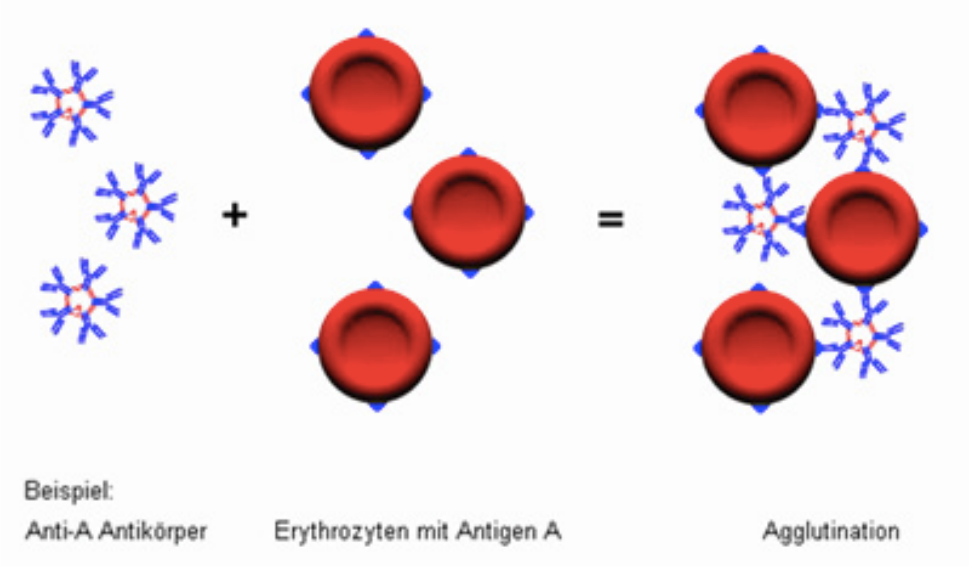
Rh Factor Antigen
Rh^+ or Rh^-

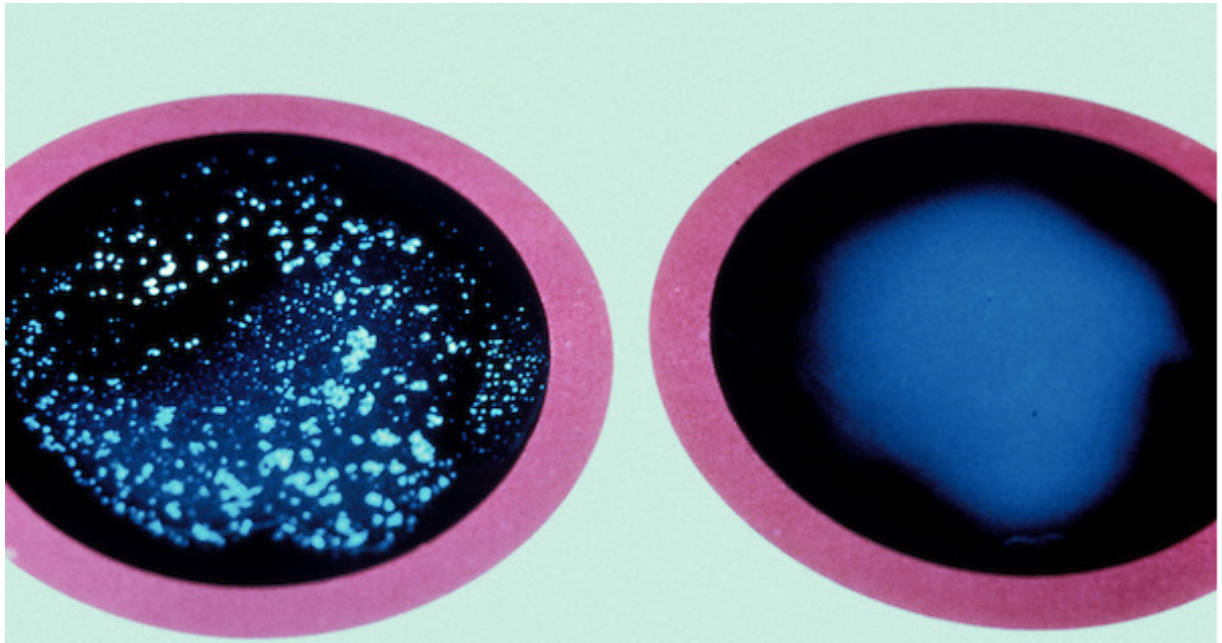
- Rh is another antigen on the surface of red blood cells
- You either have it (+) or you don't (-)

- Pregnancy
  - Rh^- Mother
  - Rh^+ Baby

What happens if some gets the wrong blood type?

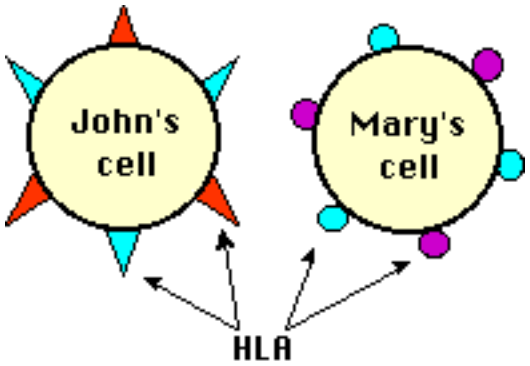
Agglutination





Tissue Typing - HLA

- HLA – Human Leukocyte Antigens
- Histo-compatibility Complex
  - Antigens (a type of protein) on cell surfaces
- Test for antigens
  - 3 major groups; A-59, B-118, DR-124 (301)
  - The more match, the better the compatibility



Cross Matching - PRA

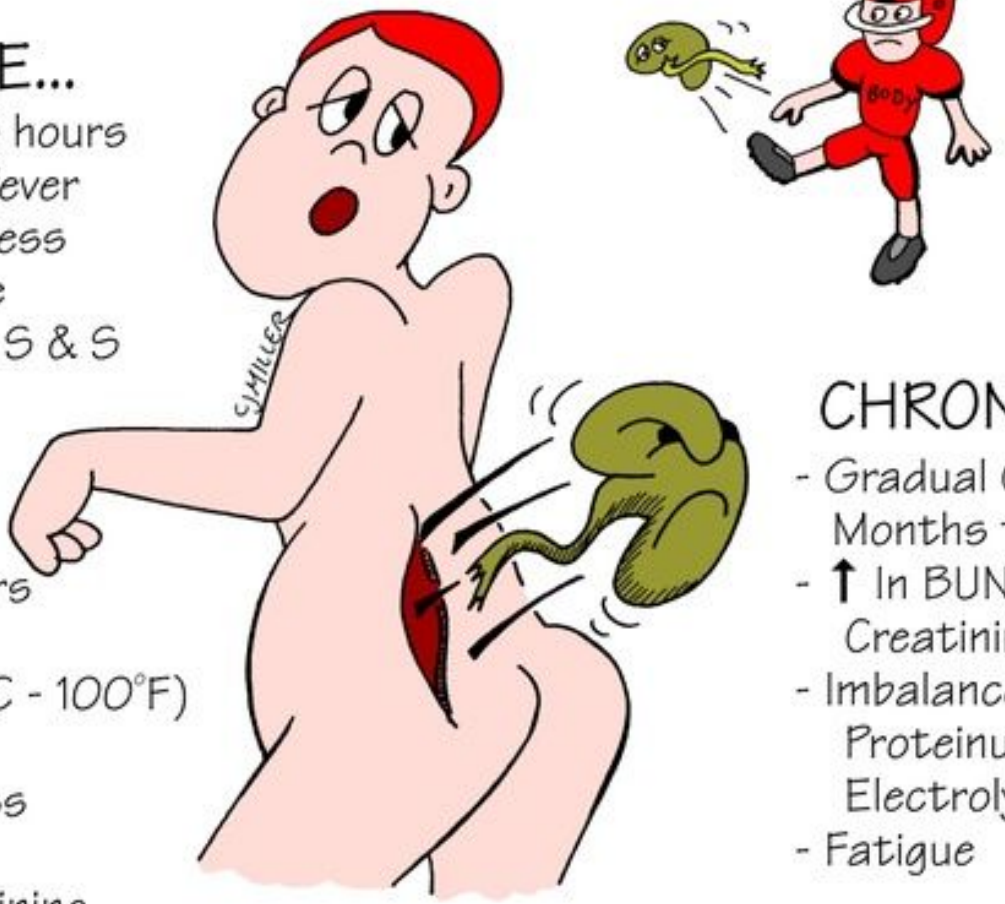
- Panel of Reactive Antibodies
- Measures the amount of antibodies to HLA in your blood
- The higher the PRA, the less chance of finding a compatible donor
- The PRA % = the % of US population not compatible with you
    - PRA of 25% means 25% of population will not be able to donate a kidney to you
    - PRA of 80% = ?

Compatibility = Better chance of success

POST KIDNEY TRANSPLANT REJECTION SIGNS

HYPERACUTE...

- Onset with 48 hours
- Malaise, high fever
- Graft tenderness
- Organ must be removed to ↓ S & S



ACUTE...

- 1 Week to 2 Years
- Oliguria, Anuria
- ↑ Temp (>37.8°C - 100°F)
- ↑ BP
- Flank Tenderness
- Lethargy
- ↑ BUN, K, Creatinine
- Fluid Retention

CHRONIC...

- Gradual Over Months to Years
- ↑ In BUN, Creatinine
- Imbalances in Proteinuria Electrolytes
- Fatigue

Which test is done first?