

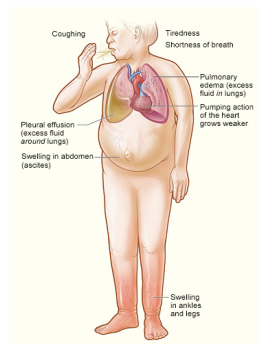
Organ Failure and Transplantation

US275 Scientific Ethics
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Tissue or Organ Failure

- Damage to a tissue or organ results in loss of function
 - disease process
 - injury



Heart Failure Signs and Symptoms
<http://www.nlm.nih.gov/health/health-topics/topics/hf/signs.html>

Tissue grafts

- goal:
 - replace or compensate for damaged tissues
- transfer of a portion of an organ to
 - another region of the body
 - to another individual

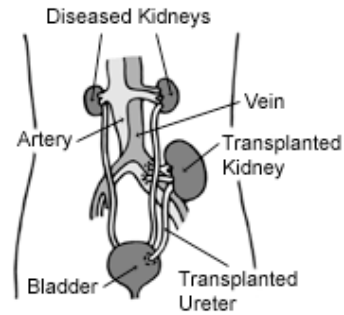
SUPPORT ORGAN & TISSUE DONATION TO



<http://www2.warwick.ac.uk/fac/med/study/ugr/mbchb/societies/medsin/organdonation/>

Organ Transplants

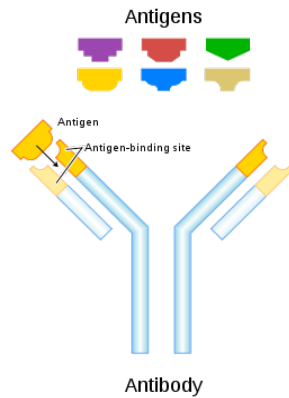
- transfer of intact organs from one individual to another
- ex. kidney transplants
 - 1954 - between identical twins
 - 1962 - from deceased donor



NIH National Kidney & Urologic Diseases Information Clearinghouse

The immune system recognizes shapes of molecules.

- antibodies or antibody-like proteins
 - bind to specific shapes of molecules in the body



The immune system learns to distinguish self from non-self.

- normally immune system ignores normal body cells
- recognizes "foreign" cells
 - non-self

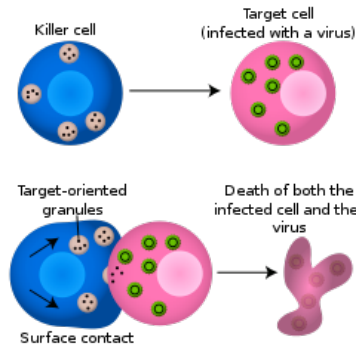


Human fetus
National Institutes of Health

Immune system recognizes and kills “abnormal” cells

- based on non-self shaped molecules on the surface

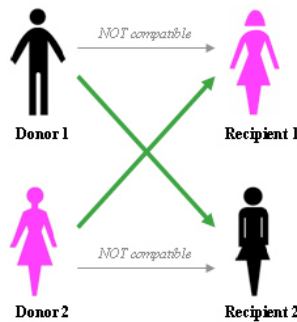
- bacteria
- cells infected with virus
- cancer cells
- non-matched transplanted cells



Wikimedia Commons

Available donor organs must be matched to the proper recipient.

- Organ Procurement and Transplantation Network
 - donor registry
- match potential donors to potential recipients based on molecular markers



http://www.kidney.org/transplantation/livingdonors/media/Figure_1.jpg

Anti-rejection medicines suppress immune response to promote survival of transplanted tissues.

- Cyclosporine
 - FDA approved in 1983
 - greatly increased survival of recipients



Blood donation is similar to a tissue graft.

- 1922
 - London volunteers available for direct blood transfusions
- 1935
 - Mayo clinic anesthesiologists establish system for storing blood
- 1940
 - Charles Drew develops method to separate, store, and ship blood



There are 4 basic human blood cell types

	Group A	Group B	Group AB	Group O
Red blood cell type				
Antibodies in Plasma			None	
Antigens in Red Blood Cell	A antigen	B antigen	A and B antigens	None

Diagram of ABO blood groups and the IgM antibodies present in each.
Wikimedia Commons.

The blood is carefully screened to avoid incompatible transfusions.

- if donated red blood cells are rejected
 - immune system attacks foreign blood cells
 - can cause shock, kidney failure, circulatory system collapse, or death.

		PATIENT					
		A	B	AB	O		
D O N O R	O						
	AB						YES
	B						NO
	A						

Lecture continues...

- Part 2. Organ Donation mini-lecture

TO BE CONTINUED

Any Questions?

Email me at:
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<http://www.pippibullennets.com/images/animated-question-mark.gif>