TOPIC: TRANSPLANTATION

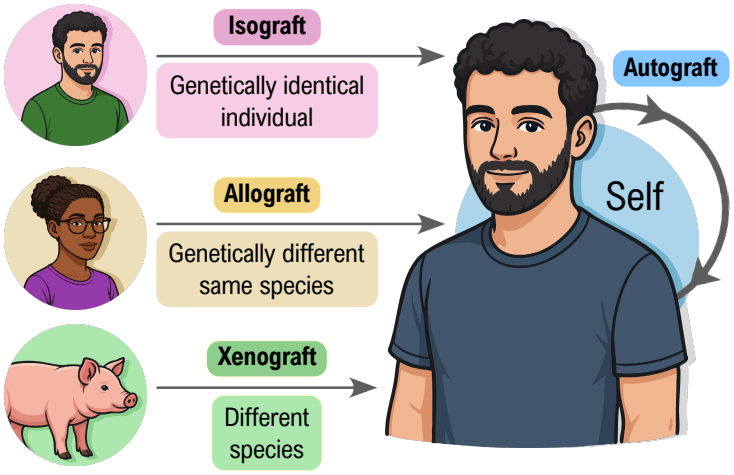
Transplantation

◆ **Transplantation (Grafting):** _____ of living tissue from one site/organism to another to restore function.

- **Graft Tissue:** the biological material (e.g. cells, tissue, organs) that is transplanted into a recipient site.

◆ There are _____ primary types of graft tissue (grafts) that vary in their source:

1. **Auto**grafts Auto = Self	Sourced from another part of the patient's _____ body.
2. **Iso**grafts Iso = Equal/Same	Sourced from another genetically _____ organism (e.g. twins).
3. **Allo**grafts Allo = Other/Different	Sourced from a genetically _____ member of *same* species.
4. **Xeno**grafts Xeno = Foreign	Sourced from an organism of a *different* _____.



◆ Sometimes complications & even _____ of the graft can occur.

EXAMPLE

Match the following examples of transplantation with the correct graft type:

a) Autograft. b) Isograft. c) Allograft. d) Xenograft.

1	_____	A collagen implant from a cow is used to repair a human's rotator cuff injury.
2	_____	A 5-year-old girl receives a bone marrow transplant from her identical twin.
3	_____	A dog's burn wound is treated with a skin graft harvested from a different part of its own body.
4	_____	A patient receives a kidney transplant from a stranger.

TOPIC: TRANSPLANTATION

PRACTICE

Individuals who have damaged or deteriorating heart valves commonly get heart valve replacement surgery. A biologic or tissue valve replacement surgery commonly replaces the patient's damaged heart valves with pig heart valves. This surgery is an example of what type of tissue graft?

a) Isograft.
b) Allograft.
c) Autograft.
d) Xenograft.

PRACTICE

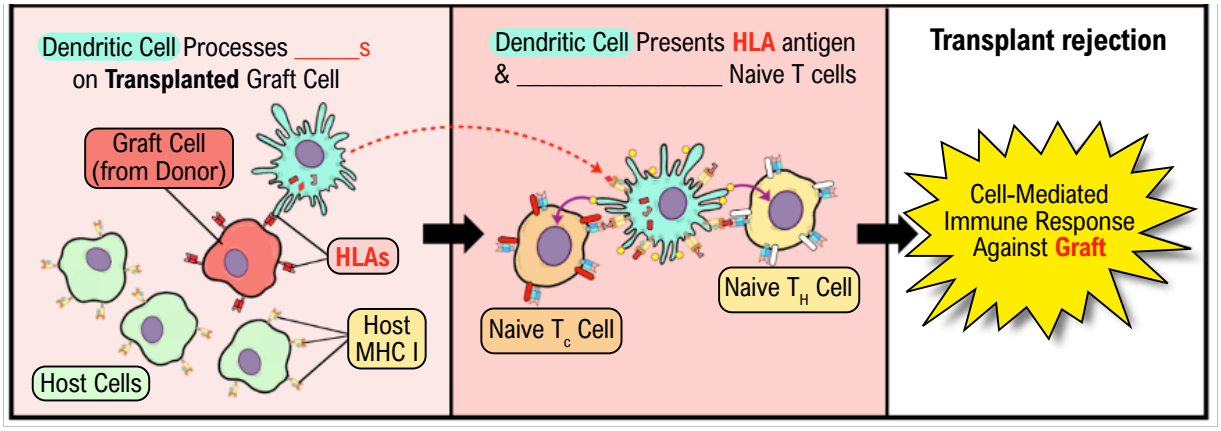
Sydney requires a kidney transplant, & she receives one from her older sister, Becca, who is 2 years older. What type of transplant is this?

a) Isograft.
b) Autograft.
c) Allograft.
d) Xenograft.

TOPIC: TRANSPLANTATION

Transplant Rejection

- If surface antigens on graft tissues (e.g. *HLAs*) *differ* from those on recipient's cells, *transplant rejection* may occur.
- **Transplant Rejection:** when a recipient's immune system recognizes graft tissue as *foreign* & _____ it.
  - Type _____ hypersensitivities play a central role in *most* _____graft & _____graft rejections.
  - **Human Leukocyte Antigens (_____)**: MHCs allowing the immune system to distinguish self from foreign.
    - HLAs must be closely matched, but there is HUGE variation (makes it hard to find a transplant match).



- Most transplant recipients require immunosuppressant drugs for the rest of their lives to prevent rejection.

PRACTICE

If the cell surface molecules of transplanted tissue do not match the recipient's cell surface molecules, the transplanted tissue may be targeted by the recipient's immune system and rejected. Which surface structures on the transplanted tissue are most likely to cause transplant rejection?

a) MHC molecules.
b) Rh antigens.
c) MLB molecules.
d) ABO antigens.

PRACTICE

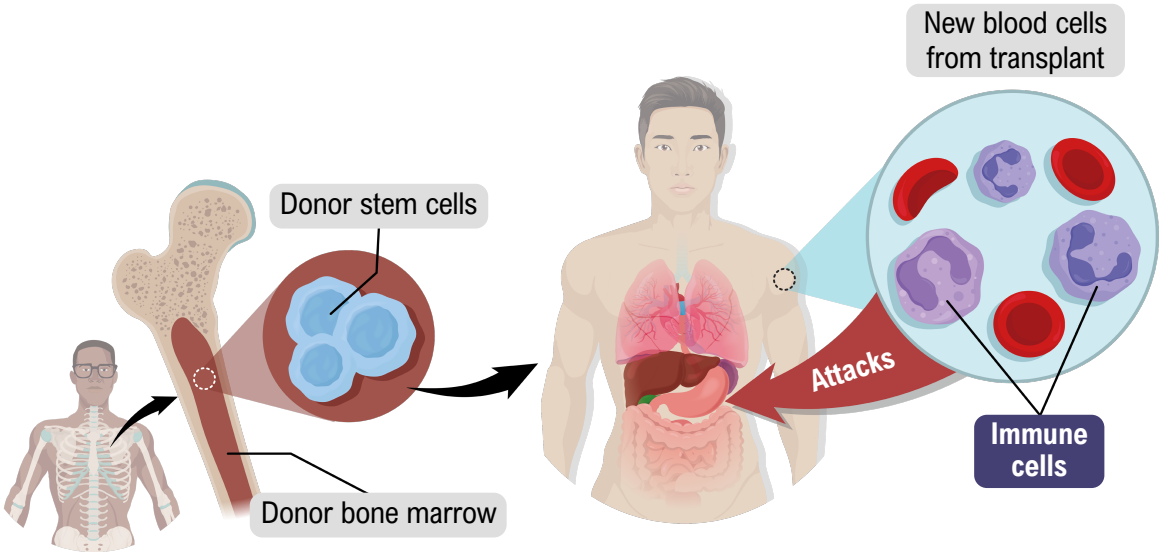
Which of the following is a non-autoimmune type IV hypersensitivity?

a) Autograft transplant rejection.
b) Allograft transplant rejection.
c) Type I diabetes mellitus.
d) Multiple sclerosis.

TOPIC: TRANSPLANTATION

Graft-Versus-Host Disease (GVHD)

- Recall: Most immune cells are made in _____ marrow (bone marrow transplant ≈ immune system transplant).
- **Graft-Versus-Host Disease (GVHD):** transplanted bone marrow produces immune cells that _____ the host.
  - Essentially the _____ of a typical transplant rejection (graft tissue attacks host, rather than vice versa).



PRACTICE

Graft-versus-host disease typically occurs due to:

a) A bone tissue allograft.

b) A bone marrow autograft.

c) A bone marrow allograft.

d) A thyroid tissue allograft.