

# Xenotransplantation and You!



by Yazeed, EC, Griffin, Archer,  
Ingrid

# What is Xenotransplantation?

- Xenotransplantation is when living animal cells, tissue, and organs are transplanted from one species to another
- Doctors first tried to transplant animal organs into humans over 100 years ago.

# Background of Xenotransplantation

- 1990-1995: 4,835 organs donated from dead donors
- 123,973 people on waiting list for organs
- 18 people die everyday while waiting for organs
- Public Health Service prepared to begin procedures
- risk of fatal disease

# History of Xenotransplantation

- received significant attention in the 1960's
- between 1963-1993, 31 clinical procedures from animal donors were performed in the US and South Africa

# Choosing a Donor Species

- Non-human primates (Chimpanzees) were originally used as donors
- However, the spread of infectious diseases and ethical issues discontinued the use of their organs
- Most researchers are now using pigs as donors

# Why Pigs are Good Donors

- They are easy to breed and have larger litters
- Pathogen-free pig breeds are available
- Pigs organs are size to human organs
- Risk of infectious diseases is lower than in non-human primates
- Pigs are already killed for food, so using pigs may raise fewer ethical concerns than non-human primates

# Promising Pig Transplant

- Uses microencapsulation to protect the cells from the immune system
- In New Zealand, Living Cell Technologies (LCT) is pioneering this technology
- Protects pig cells from the recipient's immune system with a special seaweed-based coating
- May be used to treat diseases like diabetes, Parkinson's disease, Huntington's disease, stroke and hearing loss.

# Rejection

- Hyperaccurate: rapid inflammation, thrombosis and necrosis of the transplant.
- Acute vascular rejection: Still not completely understood but shows the same effect as hyperaccurate but after 2-3 days.
- Chronic rejection: long-term slow rejection of the tissue via fibrosis in the blood.



# Benefits

- Annihilates need for organ transplantation
- Organs now only for “recreational” activities
- Faster healing
- Chance of infection could lead to research/ more studying of such diseases and their prevention

# Risks

- Obvious risk of disease
- No cure for such diseases
- Rejection of foreign cells by body
- People could end up as unstoppable bear-human hybrids



# Bibliography

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