Xenotransplantation - A New Reality?

Silje Hagen, Mathilde Fyhn Høva, Sandra Marie Næsheim
MOL270

What is xenotransplantation?

There is a shortage of organs and cells for transplants. **Use of nonhuman animal organs** have been explored to resolve this issue. While progress has been made in genetics and immunology, risks are still present.

Xenotransplantation involves transplanting live cells, tissues, or organs **from nonhuman animals to humans**, using animal organs can be customized and transplanted at a convenient time.

A 57 year old David Bennett received a genetically modified pig heart in January 2022, he lived 2 months with the transplanted heart.

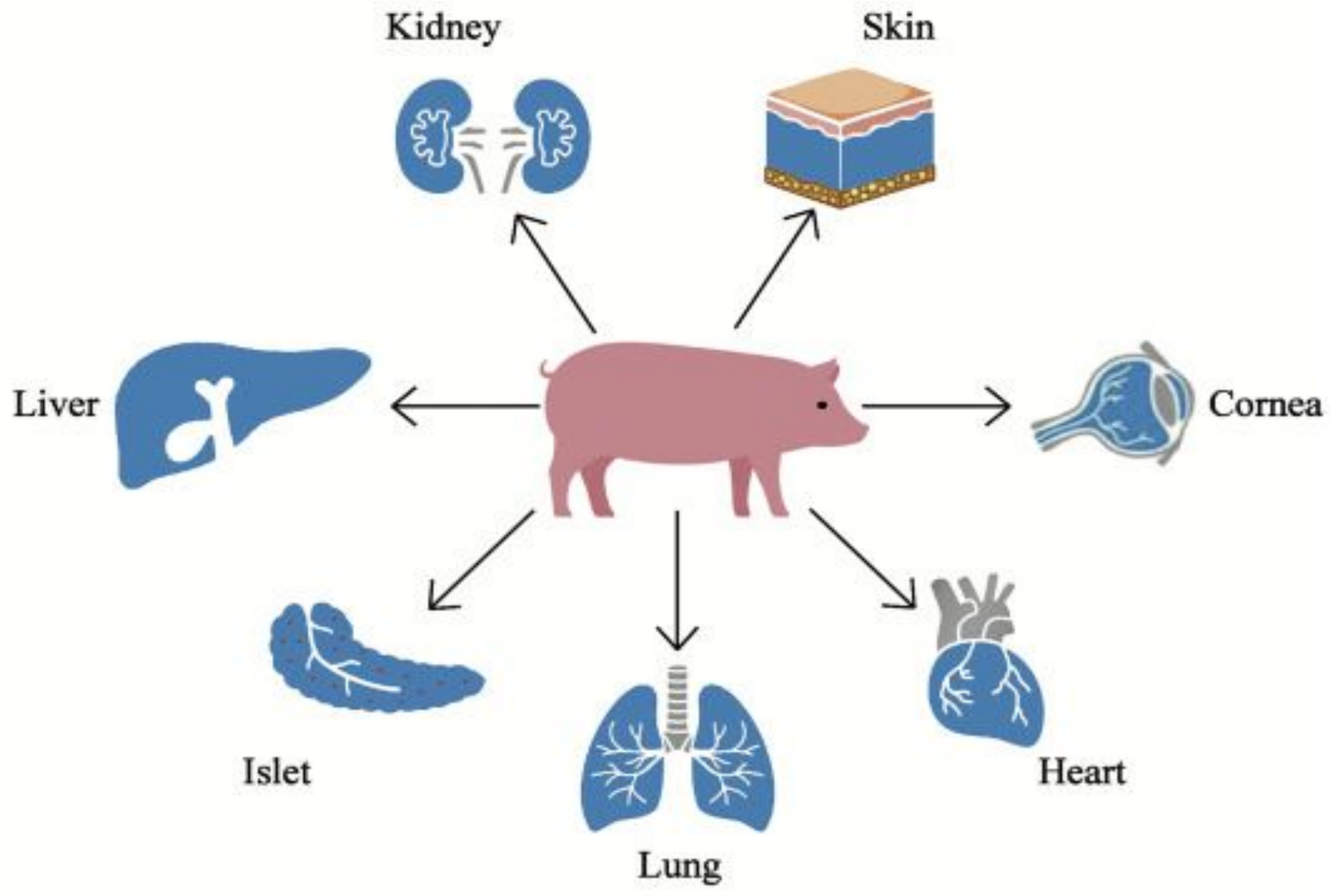
How is xenotransplantation performed?

Pigs are the most relevant donor for xenotransplantation. They are bred almost exclusively for slaughter, and their anatomy and physiology are not very different from humans. The genetic difference between big and humans is also sufficient enough so that the transfer of pathogens are unlikely compared to for example monkeys.

The gene editing tools are evolving rapidly, and genetically modified pigs are used so that the pig's organs develop to fit the human body.

Concerns with xenotransplantation

- **Physical problems** like infection and rejection
- Animal **welfare**
- The **pigs' environment**
- Lots of trial and error, resulting in **high amount of test animals**
- **Poor guidelines** for pigs used in research

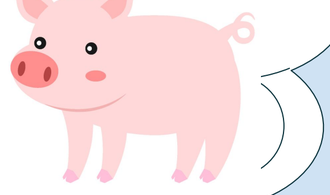


Alternatives

- Lab-grown organs
- Stemcell technology
- Implantable mechanical devices
- Improvement of the organ-donor system we have today

What do you think?

- Is it ethically right to value a human life over an animal life?
- Are the unknown long-term consequences too risky?



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