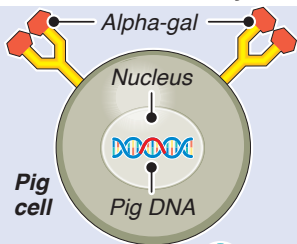
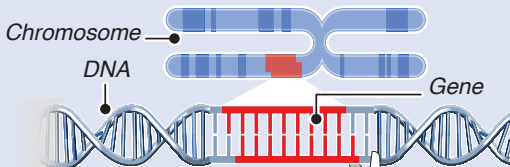


Pig kidney transplanted in human

For the first time, a kidney from a genetically engineered pig has been transplanted into a human without triggering hyperacute rejection by the recipient's immune system



1. Pig cells: Branched sugar group called **alpha-gal** occurs on cell surfaces. Alpha-gal triggers immediate rejection by human body



3. Cloning:

Modified DNA used to breed herd of Gal knock-out pigs



4. Human gene: Added to pig cells to produce protein called **CD46**. Protein moderates action of patient's immune system

2. Gal gene: Genetic modification of pig cells knocks out gene that produces alpha-gal sugar chain



5. Transplant: Kidney is attached to blood vessels at top of patient's leg, but kept outside body

