

# Chimeric pigs could grow human organs

Injecting human stem cells into pig embryos that have been genetically modified to lack specific organs could produce an unlimited supply of human organs for transplant

## 1 CRISPR-Cas9 gene editing

DNA-cutting enzyme called Cas9 acts like molecular scissors to snip through DNA of newly fertilised pig embryo

## 2 Small gRNA molecule guides scissors to specific sequence of DNA to make cut

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Pig DNA

Cas9

gRNA

## 3 Deleting key gene results in pig foetus unable to grow particular organ

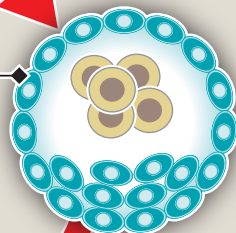
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## 4 Human induced pluripotent (iPS) stem cells – capable of becoming any cell type – are obtained from patient

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Stem cells

5 Human iPS cells are injected into embryos at blastocyst stage. Human-pig chimeric embryos are implanted into womb of sow

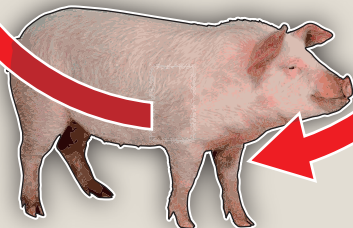


Blastocyst

## 7 Organ transplantation

Target organ is transplanted from pig to patient

6 Pig embryo develops normally but target organ is made out of patient's cells



\*CRISPR stands for “clustered regularly interspaced short palindromic repeats”

Sources: University of California, Davis, Royal Society of Biology

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