



IN VITRO FERTILIZATION

USA, 1934

Gregory Pincus

BRACE YOURSELVES

THE CLONES ARE COMING!

THE CLONES ARE COMING

VIRGIN BIRTHS?

TWO FORMS OF REPRODUCTION

1. CLONING: Identical copies of a cell
1. SEXUAL: Involving sex cells

CLONING



HUMAN CLONES



Cloning and Stem Cell Work Earns Nobel

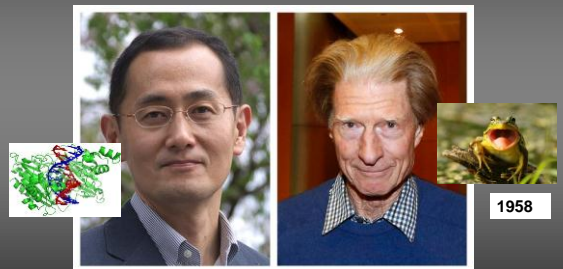
2012



Hans Dreisch , late 1800s



Hans Spemman, 1902

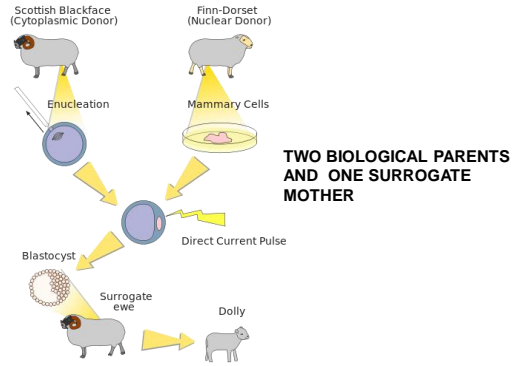


1958

Shinya Yamanaka and John B. Gurdon.

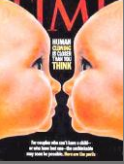


SCOTLAND, 1996



CUMULINA, THE CLONED MOUSE, JAPAN, 1997



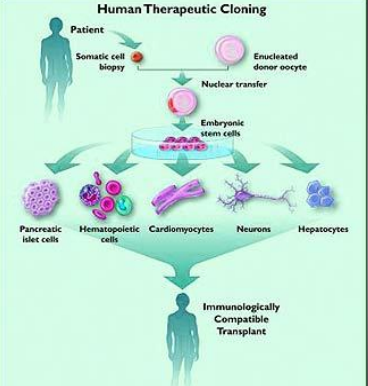

On Dec. 27, 2002 Clonaid's chief executive, Brigitte Boisselier, claimed that a baby clone, named Eve, was born.





MAY, 2013

Q. Does such a clone have the same 'status' as any other human embryo?



What is the difference between regular cloning and therapeutic cloning?

THERAPUETIC CLONING (MICE)

AUSTRALIA, 2001



WHAT ABOUT VIRGIN BIRTHS AND OTHER FORMS OF REPRODUCTION?



PARTHENOGENESIS (virgin birth)

1. Fusion of two eggs
2. Absence of chromosome reduction during meiosis

SOME FAMILIAR ANIMALS THAT HAVE VIRGIN BIRTHS



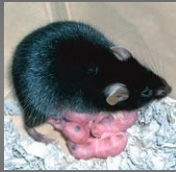
Meet Archie!



Embryonic diapause or virgin birth?

VIRGIN MAMMALS

JAPAN, 2004



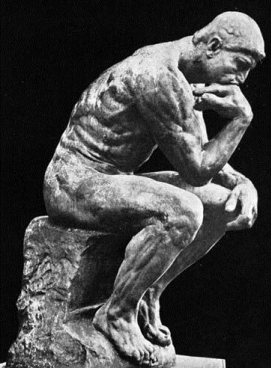
FATHERLESS MICE



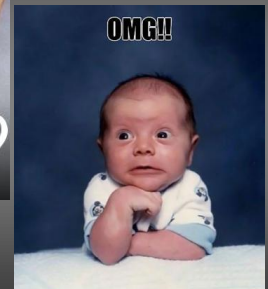
FATHERLESS MICE LIVE 30% LONGER!

CAN
PRODUCE

WOMEN
CLONING?

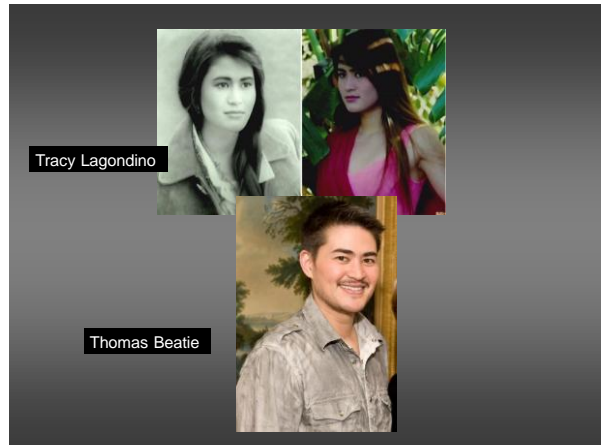
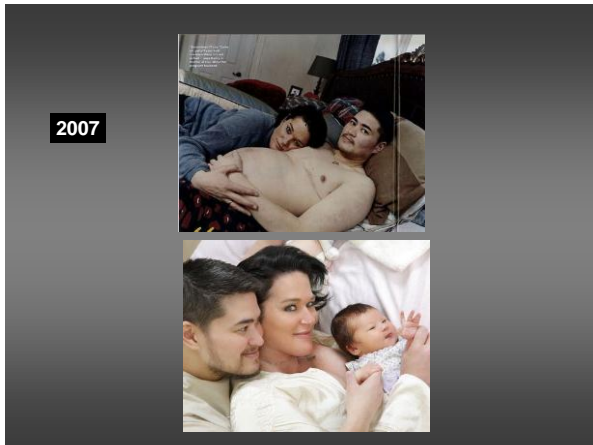


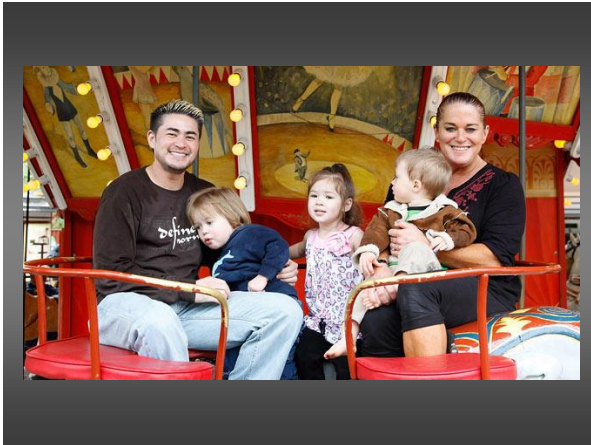
HOW ABOUT THREE BIOLOGICAL PARENTS?





2000





MIXING DNA FROM DIFFERENT SPECIES

