

# De-extinction

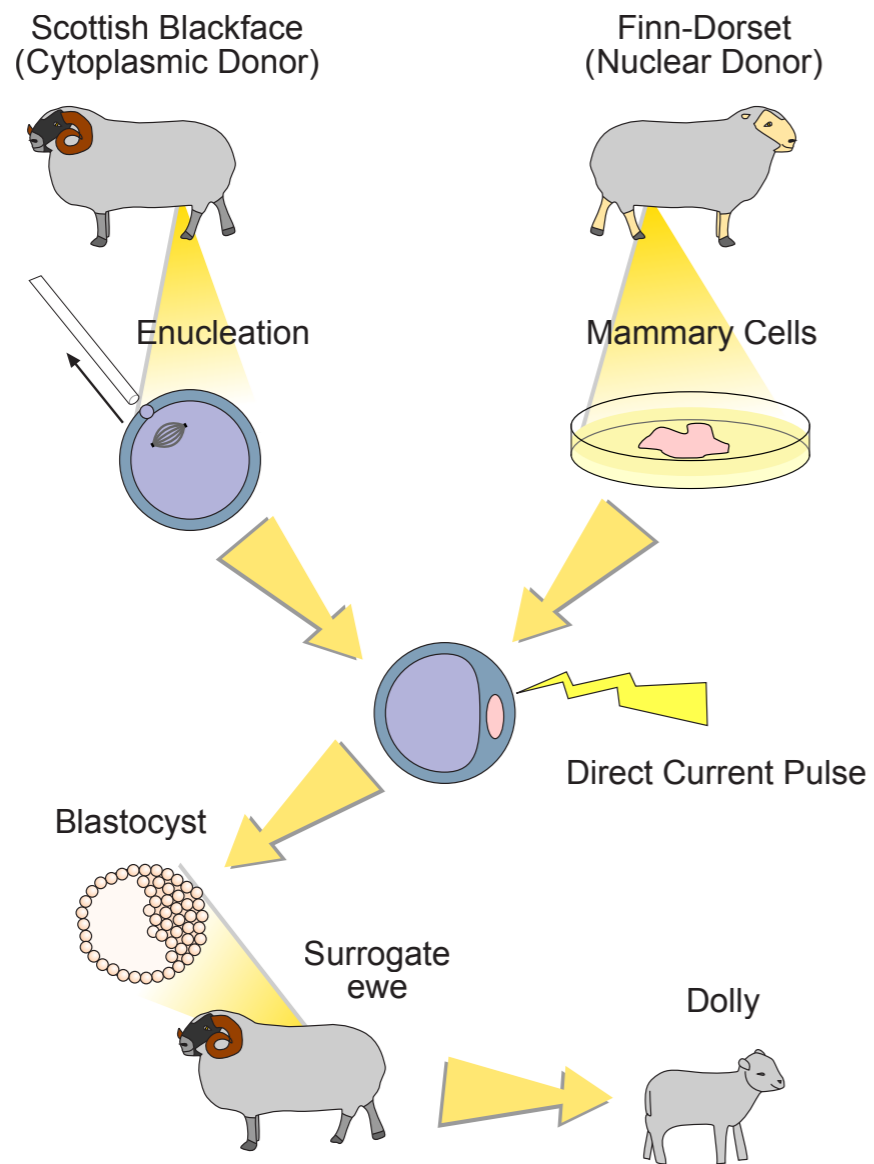
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# What is it

- The process of creating an organism, which is a member of or resembling an extinct species.
- Extract DNA from fossils, parts of animals or other articles.
- By using their DNA and selectively breeding, or cloning.
- De-extinction, resurrection biology, species revivalism.

# Methods

Cloning: create genetically identical organisms



<http://en.wikipedia.org/wiki/Cloning>

Selective breeding



[http://en.wikipedia.org/wiki/Selective\\_breeding](http://en.wikipedia.org/wiki/Selective_breeding)

# Some ongoing projects using cloning

passenger pigeon (extinct beginning 20th century)



Extracting DNA fragments from preserved specimens, and later, using band-tailed pigeons or rock pigeons as surrogate parents

[http://en.wikipedia.org/wiki/Passenger\\_pigeon](http://en.wikipedia.org/wiki/Passenger_pigeon)

First animal that survived de-extinction by cloning (2009), but died of lung defect

Pyrenaen Ibex (extinct 2000)



# Some ongoing projects using cloning

woolly mammoth (extinct 10000 years ago)



Large amounts of well-preserved mammoth tissue found in Siberia.

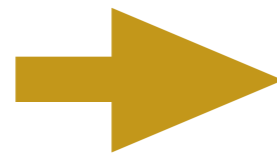
Clone woolly mammoth using elephant as surrogate mother.

Introduce mammoths in Pleistocene Park, wildlife reserve in Siberia.

Planning stage as of 2013.

# An ongoing project using selective breeding

aurochs (extinct in 1600's)



Use DNA samples from bone and teeth fragments in museums to recreate its full genome.

Compare to DNA of modern European cattle to determine which breeds still carry aurochs genes.

Undertake a selective breeding program to reverse the evolutionary process, in several generations.

# Candidate species for de-extinction and de-extinction criteria

<http://longnow.org/revive/species/>

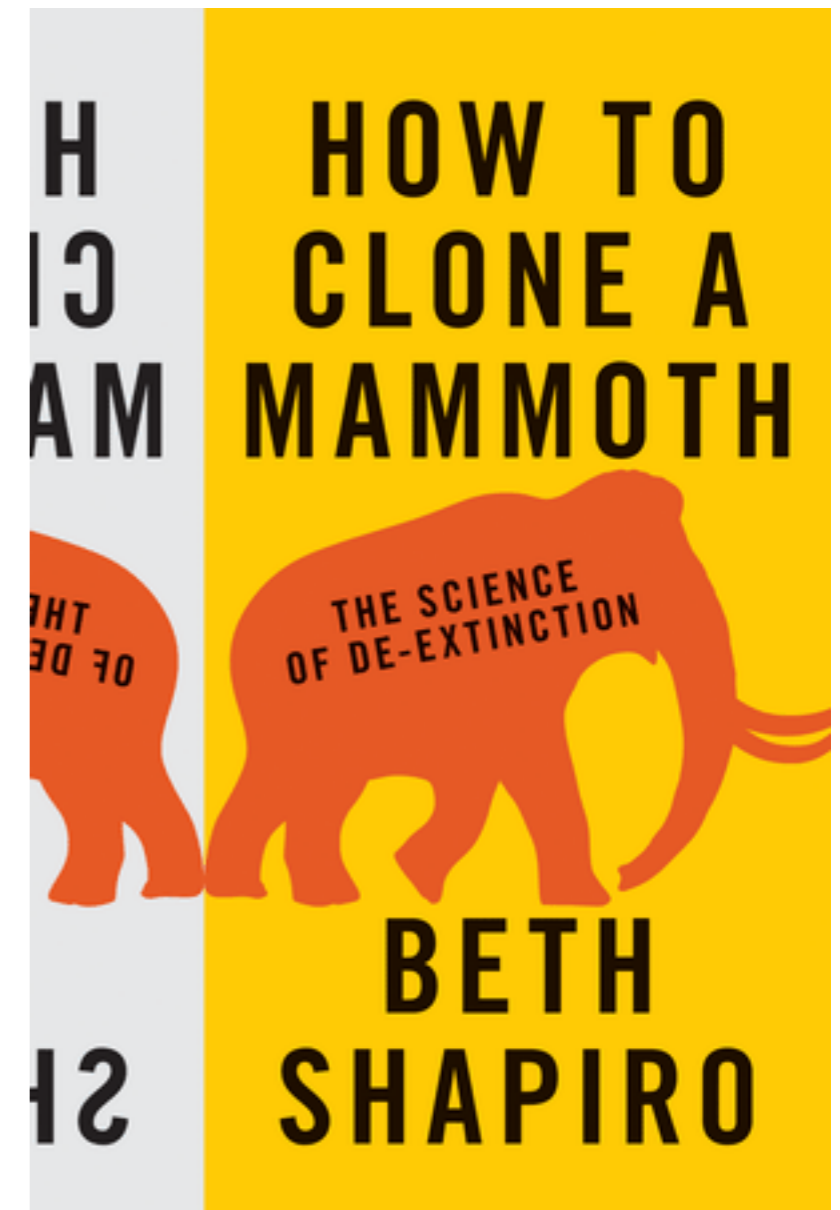
# Controversy

- Increased bio-diversity, potential new resources
- Compensate for human responsibility on extinction
  
- No access to the epigenetics, which has a central importance in modulating DNA expression
- Different behaviours than predecessors, since raised by parents of different species
- Habitat necessary for formerly extinct species to survive is too limited to warrant de-extinction
- Potential serious impact on existing ecosystem by disruption of food chain
- Efforts would be better spent conserving existing species
- ...



## Further information

- <http://longnow.org/>
- <http://longnow.org/revive/events/tedxdeextinction/>
- <http://en.wikipedia.org/wiki/De-extinction>



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