

# FOIA MARKER

**This is not a textual record. This is used as an  
administrative marker by the William J. Clinton  
Presidential Library Staff.**

---

**Collection/Record Group:** Clinton Presidential Records  
**Subgroup/Office of Origin:** Counsel Office  
**Series/Staff Member:** Kara Shurman, Kirsten Pflomm  
**Subseries:**

---

**OA/ID Number:** 20837  
**FolderID:**

---

**Folder Title:**  
[Legal Notepad w/ Handwritten Notes Re: Cloning] [loose]

| Stack: | Row: | Section: | Shelf: | Position: |
|--------|------|----------|--------|-----------|
| S      | 112  | 2        | 1      | 2         |

Cloning - the act of producing one or more individual plants or animals which are genetically identical to another plant or animal.

Two different procedures for cloning

- ① Embryo Cloning
- ② Adult DNA cloning

Human embryo cloning - start  $\bar{c}$  standard in vitro fertilization procedure - sperm and an egg cell are mixed together in a glass dish - after conception the zygote is allowed to develop into a ~~blast~~ blastula (hollow mass of cells) -

Zygote then divides into 2 cells, then four, then 8, etc. - A chemical is added to remove the zona pellucida covering, which provides nutrients to the cells to promote cell division.

When the covering is removed, the blastula divides into ~~separate~~ individual/separate cells - they are then deposited into individual dishes.

The indiv. cells are then coated  $\bar{c}$  an artificial zona pellucida & allowed to develop. Many of these pairs of zygotes were able to develop to the 32 cell stage, but no further.

This form of cloning is more like "artificial twinning" - it simulates the mechanism by which twins naturally develop.

Cloning of embryos began ~~in~~ mice experiments in the late 70's & was used in animal breeding since late 80's. The procedure for these was splitting a single fertilized ovum into 2 or more clones, each ~~one~~ was then implanted into the wombs of receptive females.

Research into cloning of human embryos has been restricted in the US.

1980's - early 90's - Reagan + Bush admins banned all human embryo research

90's - Clinton admin lifted ban on public funding of human embryo & fetal research.

Need  
name of  
panel

Dr. Steven M. M. - headed panel to produce prelim. cloning guidelines to be used by NIH to decide which cloning research to fund.

The panel recommended that studies be limited to the use of preexisting embryos - any studies be normally terminated within 14 days of conception - some experiments might be authorized to continue until the 18<sup>th</sup> day, but no further.

At that gestational age, neural tube closure begins (the start of the development of the nervous system)

The panel also recommended that certain procedures be banned: implanting human embryos in other species, implanting cloned embryos into humans, transfer of a nucleus from one embryo to another, use of embryos for sex selection.

Adult DNA Cloning - every cell in the body (except the sperm & egg) contains all of the genetic material in its DNA to, theoretically, create an exact clone of the original body.

But, cells have been biochemically programmed to perform limited functions. All other functions are turned off. Most scientists had believed that these differentiated cells could not be reprogrammed to be capable of behaving as a fertilized egg.

In the case of "Dolly", a cell was taken from mammary tissue of a mature 6yr old sheep while its DNA was in a dormant state. It was fused to a sheep ovum which had its nucleus removed. The "fertilized" cell was then stimulated with an electric pulse. Out of 277 attempts @ cell fusion, only 29 began to divide. These were then implanted in ewes. 13 became pregnant but only one lamb was born (Dolly).

Similar experiments on mice have been unsuccessful. One speculation is that the DNA in sheep may not be used by the cells until after 3 or 4 cell division. This would give the ovum "sufficient time to reprogram the DNA from [its original] mammary cell functions to egg cell functions."