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Reproductive cloning of human beings: status of the debate in the United Nations General Assembly

Report by the Secretariat

1. The Health Assembly first considered the subject of human cloning in 1997, affirming that "the use of cloning for the replication of human beings is ethically unacceptable and contrary to human integrity and morality".[1] The following year, the Fifty-first World Health Assembly reaffirmed that "cloning for the replication of human individuals is ethically unacceptable and contrary to human dignity and integrity".[2]

2. To date, some 35 countries have adopted laws forbidding human cloning. Some prohibit only cloning for reproductive purposes and allow the creation of cloned human embryos for research, whereas others prohibit the creation of cloned embryos for any purpose.

3. International documents such as the Universal Declaration on the Human Genome and Human Rights, adopted by the UNESCO General Conference in 1997 and endorsed by the United Nations General Assembly the following year,[3] and the World Medical Association's Resolution on Cloning, endorsed in 1997, have confronted the issue but lack binding legal force. Elaboration of an international convention against reproductive cloning of human beings has been under consideration in the United Nations since December 2001 when the subject was included in the agenda of the fifty-sixth session as a supplementary agenda item at the request of France and Germany. Currently, the matter is being discussed by a working group of the Sixth (Legal) Committee, to which it will report its conclusions in February 2005.

4. The present report gives an overview of the terms and methods used in cloning and summarizes the debates in the General Assembly.

[1] Resolution WHA50.37.

[2] Resolution WHA51.10.

[3] Resolution 53/152.

TERMS AND METHODS

Cloning: naturally occurring and by somatic-cell nuclear transfer

5. The term “clone”, from the Greek word for twig, denotes a group of identical entities. It has recently also come to mean a member of such a group and, in particular, an organism that is a genetic copy of another organism. The term applies not only to entire organisms but also to copies of molecules (such as DNA) and cells.

6. Cloning happens in nature; it can occur in organisms that reproduce sexually and those that reproduce asexually. In sexual reproduction, clones are created when a fertilized egg splits to produce identical (monozygous) twins with identical genomes. Most natural cloning occurs in those species that produce their descendants asexually, that is, without combining the male and female genetic material. Although many species produce clonal offspring in this fashion, Dolly, the lamb born in 1996 at a research institute in Scotland, was the first asexually produced mammalian clone.

7. Somatic-cell nuclear transfer, the technique by which Dolly was created, was first used 40 years ago in research with tadpoles and frogs. The nucleus of an adult somatic cell (such as a skin cell) is removed and transferred to an enucleated egg, which is then stimulated with electric current or chemicals to activate cell division. To proceed to pregnancy and birth, the resulting blastocyst is transferred into the uterus of a female host; if it implants and the pregnancy goes to term, the resulting individual will carry the same nuclear genetic material as the donor of the adult somatic cell. However, an animal created through this technique would not be a precise genetic copy of the source of its nuclear DNA because each clone derives a small amount of its DNA from the mitochondria of the egg (which lie outside the nucleus) rather than from the donor of cell nucleus. Thus, the clone would be genetically identical to the nucleus donor only if the egg came from the same donor or from her maternal line.

8. Scientists were initially interested in somatic-cell nuclear transfer as a means of determining whether genes remain functional even after most of them have been switched off as the cells in a developing organism assume their specialized functions as blood cells, muscle cells, and so forth. The fact that the DNA of a fully differentiated (adult) cell could be stimulated to revert to a condition comparable to that of a newly fertilized egg and to repeat the process of embryonic development demonstrates that all the genes in differentiated cells retain their functional capacity, although only a few are active.

9. Beyond this scientific interest, the commercial concern in animal cloning focuses on replicating large numbers of genetically identical animals, especially those derived from a progenitor that has been modified genetically. In this fashion, mice or other laboratory animals that exhibit particular traits can be created for specialized studies, or herds of farm animals (such as goats, sheep or cows) can be created that produce pharmaceutically useful proteins in their milk. Were human somatic-cell nuclear transfer to succeed, it would produce individuals who were genetically almost identical to one another and to the individual whose cell nucleus was used to produce them. They would almost certainly not be identical physically or in personality, however, just as monozygous twins are not wholly identical, because each organism’s development is influenced by the interaction of its genes with its environment, including the gestational environment.

Cloning for reproductive, medical or scientific purposes

10. The use of somatic-cell nuclear transfer for reproduction in human beings would raise scientific and ethical issues. In all the species of mammals cloned so far – including mice, rabbits, pigs, cattle and sheep – unpredictable genetic and epigenetic problems have arisen that have not only led to a high rate of abnormalities and prenatal death but have also created health problems for most of the animals born alive, problems that differ from one clone to another. For this reason, national academies of science and other scientific leaders from around the world have expressed opposition to the reproductive use of the technique in human beings. Beyond these safety concerns, the conclusion reached by the Health Assembly in 1998 – that the replication of human individuals through cloning would contravene human dignity and integrity – is also widely held.

11. The term "human cloning" can also be applied to the creation of embryos through somatic-cell nuclear transfer not to produce children but for use as a scientific tool. Such nonreproductive use of cloning is sometimes called "research cloning" (or, less accurately, "therapeutic cloning", there being at present no therapeutic use) to differentiate it from cloning for reproductive purposes. Research cloning is being pursued in particular as a means of creating human embryonic stem cells for scientific study and potentially for therapy. Once cloned embryos have reached the blastocyst stage (about five days after fertilization), the inner cell mass, from which stem-cell lines are derived, is removed, an action that destroys the embryo. Some scientists engaged in this work prefer to describe it as "somatic-cell nuclear transfer to create stem cells", because they feel that the term "cloning" connotes the creation of a child. Critics of this position respond that "cloning" is the appropriate term and argue that it is more accurate to say that the same technique – the creation of embryos through somatic-cell nuclear transfer – can have two different outcomes: the production of embryos for research (for example, as a source of stem cells) or the production of human beings.

12. In February 2004, scientists in the Republic of Korea reported the creation of a stem-cell line from a cloned human embryo. They enucleated 242 oocytes from 16 donors into which they transferred the DNA of ovarian cells from the same donors. Thirty embryos reached the blastocyst stage; from these, the scientists extracted the inner cell mass for the cultivation of stem-cell lines, one of which was successfully established. Six months later the Human Fertilisation and Embryology Authority in the United Kingdom of Great Britain and Northern Ireland granted the first licence in Europe to allow researchers to use cloning by somatic-cell nuclear transfer for embryonic stem-cell research.

13. The production of stem-cell lines from cloned human embryos has been proposed as a means of advancing drug development and evaluation, diagnostic methods, and cellular and tissue transplantation. If material used in transplantation were derived from embryos cloned from the patient needing the transplant, they might be less subject to rejection than material from another person, since the DNA in the cloned cells would be nearly identical to the patient's own. Whether human embryonic stem cells (compared to stem cells from adult tissues) hold unique therapeutic promise and, if so, whether the creation of cloned embryos as a source of stem cells would add to their therapeutic value are matters of current scientific investigation.

14. Whatever the merits of these therapeutic objectives for research cloning, some scientists want to use somatic-cell nuclear transfer for basic research; they argue that it presents a unique method for studying genetic changes in cells derived from patients with conditions such as Parkinson's disease, Alzheimer's disease and diabetes.

DEBATE IN THE UNITED NATIONS ON AN INTERNATIONAL TREATY AGAINST HUMAN CLONING

The debate in the Fifty-sixth to Fifty-eighth sessions of the General Assembly (2001 to 2003)

15. Having agreed to consider the elaboration of an international convention against the reproductive cloning of human beings, the General Assembly at its fifty-sixth session decided to establish an Ad Hoc Committee to consider the elaboration of an international convention against the reproductive cloning of human beings, which was requested to report on its work to the General Assembly at its fifty-seventh session.[1] The Ad Hoc Committee met in early 2002 to discuss the proposal put forward by France and Germany to outlaw reproductive cloning, and the debate was continued by the Working Group of the Sixth Committee in September 2002. Although all countries opposed human reproductive cloning, some favoured a more comprehensive approach, banning human cloning for all purposes including research or therapy.

16. At its Fifty-seventh session, in 2002, the General Assembly considered the reports of the Ad Hoc Committee and the Working Group,[2] and decided that a working group of the Sixth Committee should again be convened during the fifty-eighth session to continue the work.[3] That working group, which met from 29 September to 3 October 2003, continued to encounter difficulties in drafting a treaty, as the differences between the proponents of a ban on reproductive cloning[4] and those of a total ban[5] could not be resolved.[6] Finally, the Sixth Committee supported (by 80 votes to 79) a procedural motion to adjourn the debate to the sixtieth session of the General Assembly,[7] but the General Assembly decided without a vote to delay the discussion of a global treaty for just one year and included the item on the provisional agenda of its fifty-ninth session.[8]

The debate in the fifty-ninth session of the General Assembly (2004)

17. The issue was again taken up by the Sixth Committee during the current session of the General Assembly. Although the representatives of all Member States continued to agree on the urgent need to prohibit reproductive cloning, they remained divided on whether the treaty should also ban the creation of cloned human embryos for medical or scientific purposes. The draft resolution introduced by the representative of Costa Rica on behalf of more than 60 other countries,[9] would outlaw all forms of human cloning. Arguments offered for a comprehensive ban were that: first, it would be impossible

[1] Resolution 56/93.

[2] Documents A/57/51 and A/C.6/57/L.4, respectively.

[3] Decision 57/512.

[4]. Draft resolution introduced by the representative of Belgium on behalf of numerous Member States, document A/C.6/58/L.8.

[5] Draft resolution introduced by the representative of Cost Rica on behalf of numerous Member States, document A/C.6/58/L.2.

[6] Document A/C.6/58/L.9.

[7] Document A/58/520.

[8] Decision 58/523.

[9] Document A/C.6/59/L.2.

to control reproductive cloning if the cloning of human embryos is permitted for other purposes, and secondly, the act of creating and then destroying a cloned human embryo is inherently wrong because it involves treating a human being as a mere object and taking a human life. An alternative draft resolution introduced by the representative of Belgium[1] would ban human cloning for reproductive purposes and offer individual nations three options for controlling other forms of human cloning: adopting a ban, imposing a moratorium, or regulating them through national legislation to prevent misuse. The proponents of this position argued that the only prohibition on which universal agreement existed was outlawing reproductive cloning, which should be enacted promptly to send a clear message to the irresponsible physicians and researchers who are attempting to create children through somatic-cell nuclear transfer, and that, to achieve universal scope, a convention must take into account differences in opinion and regulation regarding "therapeutic cloning" among Member States. Regarding the danger that research cloning could lead to reproductive cloning, proponents of the draft resolution introduced by Belgium argued that it is the task of legal frameworks to set appropriate limits and control misuse.

18. Once it became clear that neither proposal would attract overwhelming support, a third alternative was introduced in the Sixth Committee on 19 November 2004 by the representative of Italy. This draft resolution proposes a declaration that would call upon Member States to adopt and implement legislation "to prohibit any attempts to create human life through cloning processes and any research intended to achieve that aim" and "to ensure that, in the application of life science, human dignity is respected in all circumstances and, in particular, that women are not exploited".[2] The declaration would further call upon Member States to adopt "measures necessary to prohibit applications of genetic engineering techniques that may be contrary to human dignity". The preamble to the declaration notes "the urgency of preventing the potential dangers of human cloning to human dignity" while reaffirming that "applications of life science should seek to offer relief from suffering and improve the health of individuals and humankind as a whole", provided that progress is "sought in a manner that safeguards respect for human rights and the benefit of all".

19. A proposal to establish a working group to finalize the text of a declaration on human cloning, based on the Italian draft resolution, was approved by consensus on 19 November 2004. The working group will meet on 14, 15 and 18 February 2005, and the Sixth Committee would meet on the afternoon of 18 February 2005 to take action on the report of the working group.

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[1] Document A/C.6/59/L.8.

[2] Document A/C.6/59/L.26.