

per family is likely to be the norm in future, and couples for emotional security may like to have cells of their child preserved in liquid nitrogen, as a 'backup' to be used for cloning in the event of untimely death. If the child suffers from leukaemia and needs regular bone marrow transplant, the best source would be the clone, also for organ transplant. Parents having a child with genetic disorder such as Duchenne muscular dystrophy (DMD) would be extremely happy to have a clone of their child in which the genetic disorder was corrected before embryo implantation. This may be possible one day as selective implantation is possible at present. Only the families having a child with such genetic disorder can appreciate the joy of having a 'normal' version of their loved one. Similarly, it may be possible to obtain a virus-free clone of a child accidentally infected with AIDS virus. These, however, will raise perplexing moral and emotional issues.

Misuse of the technology to produce one or more clones of a dictator, potentate or CEO of a large corporation certainly cannot be ruled out if the technology is

available. However, this possibility should be considered on the basis of the misuse of the already available reproductive technologies. How many of the dictators or the 'gurus' with unquestioned blind following have used artificial insemination to perpetuate their genes?

Ethical issues are certainly the most difficult as the moral values differ in different societies and individuals within the society. The most common objection often raised by the religious leaders is that humans should not interfere in God's creation. Such views are irrelevant, like many other stands of the religious leaders, for example, on population control in the present society. Civilization has developed by modifying nature or as the believers would say 'God's own creations', to satisfy its needs in all aspects of life. We enhance natural immunity by vaccination, get rid of infections by antibiotics, remove or replace damaged organs by surgery to prolong the life span, and at the same time use different means to control population. All these are human interferences with nature or God's creation. Without such modifica-

tions of nature and natural processes, the modern society cannot maintain its current life style. Should there be limits set on the development of technologies that may, in future, improve the quality of life? We will go only this far, but not beyond. The development of the cloning technology should not be banned just because of the fear that it may be misused by some. All technologies can be misused and that should not be the reason to prohibit their development and use. Legal means to prevent misuse should be applied. Cloning technology, as outlined earlier, may in future bring enormous emotional satisfaction to a section of the society. At the same time, as in the human genome research, certain percentage of funds should be used to understand, ethical, legal and social implications of the technology.

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Hello Dolly

Dolly's emergence (*Curr. Sci.*, 1997, **72**, 362-364) has raised too many unwanted ethical questions rather than appreciating many things that it has exposed. First, the myth of the 'one way clock' in animal cell differentiation has been debunked and this has brought cheer to those trying to control or reverse uncontrolled cell proliferation. In food and agriculture, abundance of identical animal meat may not be possible but abundance of milk is predicted. Emergence of a world free

of sex and sex-related crime is bound to make it a safer place for the females. While cloning men to yield identical duplicates may have problems because of the need for and variation in surrogate mothers, the emergence of 'do-it-yourself' technology to generate identical women appears to be in the offing. In other words, cloning Hitlers, Amins or Sukh Rams may be difficult but cloning Jayalalithas, Shiela Kauls, the Bandit queens and the like, appears a

strong possibility. Let us therefore not worry about the custom made soul but worry about the emergence of a society full of clones of the above types.

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