

**Commentary to:**

Klimanskaya, I.; Chung, Y.; Becker, S.; Lu, S.J.; Lanza, R.:  
Human embryonic stem cell lines derived from single blastomeres.  
*Nature* 444: 481-485 (2006)  
(Commentary sent to *Nature* in August 2006 but not published)

The recent report by Klimanskaya et al. (*Nature* advance online publication, 23 August 2006) (1) has stirred much public attention because it appears to indicate a way how in the future human embryonic stem (hES) cells might be produced without sacrificing the embryo. While this is being reported widely in the lay press it gives the wrong impression that the last major hurdle for general acceptance of hES cell research is being overcome. It appears important to point out that clearly this is not the case because neither this nor other previous proposals about alternative sources for hES cells (White Paper of the US President's Council on Bioethics) (2) are solving the problem lying in the developmental potential of ES cells. The latter, however, may even be the scientifically more challenging problem (3, 4).

As known from experiments done in the mouse (confirmed by many laboratories around the world) at least a subset of mouse ES cell lines allows to reconstruct viable embryos and newborns by tetraploid complementation (TC) (5, 6). All experts agree that there is no reason to believe that such direct reproductive (or research) cloning cannot be equally successful with human ES cells if ever attempted. Wide consensus has been reached in the Western world not to regard reproductive cloning ethically acceptable. However, this clearly cannot guarantee that such cloning will never be done in other countries. Due to the unlimited lifespan of ES cell lines even strict rules for control of distribution of ES cells (e.g. after banking), being established in some Western countries, cannot be guaranteed to be observed at all times in all cultures of this world (for example some Buddhist authorities would tend to ban therapeutic but not reproductive cloning). It should be obvious that this is an aspect that must be (but in fact so far barely is) taken into consideration in connection with obtaining informed consent from the donors (parents) and with respect to patenting ES cells (even genetically modified cells) (7, 8).

In the context of the report by Klimanskaya et al. (1) it may appear conceivable that, if blastomere biopsy for PID becomes accepted practice, the donation and use of an additional blastomere for ES cell production could one day also be seen as an attractive option by some parents. However, far too little attention is being paid at present to the ethical problems posed by the unique developmental potential of ES cells, as illustrated by the possibility to perform TC. Specifically, when obtaining informed consent from embryo donors (parents) the information must not be omitted that propagation of this ES cell line automatically opens the (at least theoretical) possibility for direct reproductive cloning by TC of (even numerous) siblings that are genetically identical to their PID-tested child.

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2. The President's Council on Bioethics: Alternative sources of human pluripotent stem cells. [http://www.bioethics.gov/reports/white\\_paper/index.html](http://www.bioethics.gov/reports/white_paper/index.html) (2005).
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