

Mouse stem cell line advance suggests potential for IVF-incompetent eggs

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Researchers have found that mouse oocytes that fail to become fertilized during in vitro fertilization are nevertheless often capable of succeeding as "cytoplasmic donors" during a subsequent cloning step using so-called nuclear transfer. Although the implications for human eggs are not yet clear, the findings are of interest because of the ethical and practical concerns surrounding the need for fresh human oocytes for similar nuclear-transfer procedures using human cells.

The findings, reported by Teruhiko Wakayama, Sayaka Wakayama, and colleagues at RIKEN Kobe in Japan, appear in the February 20th issue of the journal *Current Biology*, published by Cell Press.

Human IVF is now routinely practiced in fertility clinics, but a proportion of oocytes fail to become fertilized in these procedures. In the new work, researchers examined the ability of day-old mouse oocytes that fail to become fertilized in vitro—"aged, fertilizationfailure" (or AFF) oocytes—to succeed in a standard cloning procedure in which the oocyte's nucleus is removed and replaced by the nucleus of a somatic cell. Although this nuclear-transfer procedure showed a lower rate of success in the very first stages of cloning compared to nuclear transfer with fresh oocytes, the early (morulae- or blastocyst-stage) mouse embryos derived from nuclear transfer using AFF oocytes showed similar rates of success in giving rise to embryonic stem cell lines.

None of the AFF-derived mouse embryos tested were capable of



developing to full term, and in general, cloning by nuclear transfer sees a low success rate even when fresh eggs are used. But the authors indicate that nuclear-transfer protocols have yet to be perfected, and that the new findings suggest that once techniques required for human nuclear transfer have been optimized, it may be possible to use oocytes that failed to fertilize during IVF attempts and would otherwise be discarded.

Source: Cell Press

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