



Title	DEVELOPMENT OF A SINGLE BLASTOMERE FROM A DIPLOID 8-CELL MOUSE EMBRYO INJECTED INTO THE PERIVITELLINE SPACE OF A TETRAPLOID 4-CELL EMBRYO
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DEVELOPMENT OF A SINGLE BLASTOMERE FROM A DIPLOID  
8-CELL MOUSE EMBRYO INJECTED INTO THE PERIVITELLINE  
SPACE OF A TETRAPLOID 4-CELL EMBRYO

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This study aimed to produce identical offspring from one diploid 8-cell stage mouse embryo, using the technique of injecting a blastomere from the 8-cell stage embryo into the perivitelline space of a tetraploid 4-cell stage embryo. Initially the capability of diploid-tetraploid aggregated embryos to produce offspring was investigated. Thereafter, the capability to produce offspring from one blastomere of a diploid 8-cell embryo injected into a tetraploid 4-cell embryo was examined. The presence of cells originating from the tetraploid embryo was also examined by glucosephosphate isomerase-1 (GPI-1) analysis.

The offspring obtained from aggregation had the features of diploid embryos. Five of 6 offspring which were analyzed by GPI did not show chimerism.

From 93 to 98 percent of tetraploid 4-cell embryos which received a blastomere from an 8-cell embryo developed to normal blastocysts, while 10 to 11 percent of embryos transferred to recipient mice developed into young (n=24), including 2 sets of triplets and 6 sets of twins. Only 1 of 7 mature offspring exhibited the coat color of a chimera, while the other 6 offspring presented the coat color derived from diploid embryos. However, GPI-1 analysis showed that all of 7 offspring examined were chimeras. Of these, 3 mature mice had normal reproductive ability.

This study demonstrates that it is possible to obtain identical offspring with a diploid phenotype by injecting a single blastomere from an 8-cell embryo into the perivitelline space of a tetraploid 4-cell embryo. However, it seems difficult to obtain offspring which are not chimeras.