3: EVALUATION OF DEVELOPMENTAL COMPETENCE OF ZONA PELLUCIDA-FREE MOUSE TWO-CELL EMBRYOS BY TIME-LAPSE MONITORING SYSTEM

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Objective
The aim of this study was to clarify the role of the zona pellucida (ZP) in embryonic development of mice embryos, to investigate the effect of blastomeres alignment of ZP-free embryos on developmental competence, and to explore whether the time of compaction appearance correlates with preimplantation embryonic development and trophoblastic outgrowth potential.

Design
Animal experiment

Material and Methods
Mouse 2-cell embryos were collected on 1.5 days post coitum (dpc), and their ZP were removed using acid Tyrode's solution. Embryonic development from 2-cell to the outgrowth stage (on 1.5 to 7.5 dpc) was monitored using a time-lapse monitoring system.

Results
There was no difference in blastocyst formation between ZP-free and ZP-intact embryos. Pattern of blastomere alignment in ZP-free 4-cell embryos did not significantly affect blastocyst development and outgrowth potential. Interestingly, ZP-free 4-cell embryos with 5-point contacts in blastomeres showed significantly shorter mean cumulative time of development from 2-cell to blastocyst stage compared with those which had 4-point contacts. In addition, early compacted embryos before the 8-cell stage but with intact ZPs showed low developmental competence to blastocyst stage. This study has shown that the removal of the ZP does not affect blastocyst development and outgrowth potential in vitro in mice 2-cell embryos.

Conclusions
Collectively, we suggest that modification of ZP could apply various purposes without decreasing developmental competence in mice 2-cell embryos.

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