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Improved development of parthenotes after TSA treatment might be linked to changes in nuclear organisation

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Genome reprogramming in early embryos is associated with nuclear reorganization and chromatin remodelling. We recently reported an improved nuclear reorganisation in clones treated with trichostatin A (TSA), which correlates with an improved efficiency of development to term (Maalouf *et al*., 2007). In this study, we analysed the effects of TSA on the reorganisation of centromeric and pericentric heterochromatin structure in mouse parthenogenetic embryos. In both the treated and non-treated parthenotes, most heterochromatin sequences relocated around the nucleolar precursor bodies (NPBs) as in the female pronuclei of naturally fertilised embryos. However, the clustering of heterochromatin into chromocenters during the second embryonic cycle was significantly reduced in control parthenotes as compared to naturally fertilised embryos (p= 6.4e-07). Moreover, the supplementation of TSA at 5nM during the first embryonic cycle resulted in an even lower number of chromocenters at the end of the second cycle (p= 9.5e-09). Unexpectedly, we also observed that TSA treatment resulted in extended survival of parthenogenetic foetuses after transfer into foster mothers. In conclusion, the development of parthenogenetic embryos after treatment of TSA will be discussed in terms of nuclear reprogramming.
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Mr Zichuan Liu is a joint PhD student at the Insitute of Zoology, Chinese Academy of Sciences with Prof Qi Zhou and the Institut National de la Recherche Agronomique (INRA) with Dr Nathalie Beaujean. Currently, he is using both mouse and rabbit embryos as animal models. His research interest is related to the study of genome organization in the early developing embryo after fertilization, cloning or parthenogenetic activation. He is focusing on the study of chromatin dynamics in early development using a variety of techniques of cellular and molecular biology, embryo manipulation, *in situ* hybridization, immunostaining and confocal imaging.