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Chimeric contribution of human extended pluripotent stem cells to monkey embryos *ex vivo*

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Highlights

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Summary

- Generation of human-monkey chimeric embryos *ex vivo* with hEPSCs

Graphical abstract

Keywords

- hEPSCs differentiated into hypoblast and epiblast lineages

Reference

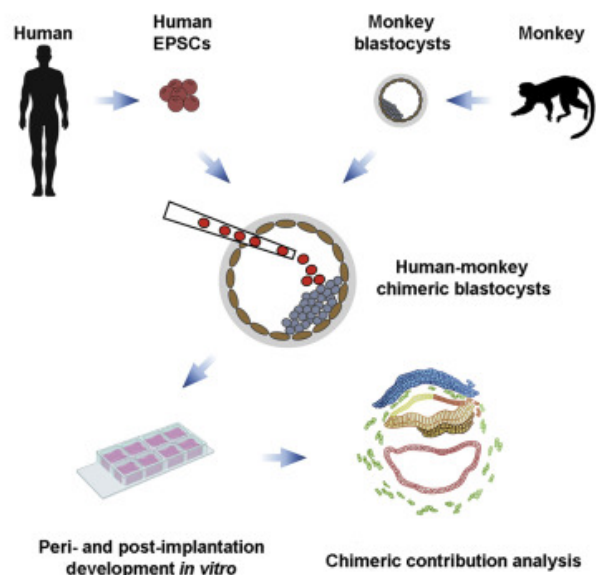
- s • scRNA-seq analyses revealed developmental trajectories of human and monkey cells
- Article Info
- Comment s • The approach may allow for enhancing chimerism between evolutionarily distant species

Summary

Interspecies chimera formation with human pluripotent stem cells (hPSCs) represents a necessary alternative to evaluate hPSC pluripotency *in vivo* and might constitute a promising strategy for various regenerative medicine applications, including the generation of organs and tissues for transplantation. Studies using mouse and pig embryos suggest that hPSCs do not robustly contribute to chimera formation in species evolutionarily distant to humans. We studied the chimeric competency of human extended pluripotent stem cells (hEPSCs) in cynomolgus monkey (*Macaca fascicularis*) embryos cultured *ex vivo*. We demonstrate that hEPSCs survived, proliferated, and generated several peri- and early post-implantation cell lineages

inside monkey embryos. We also uncovered signaling events underlying interspecific crosstalk that may help shape the unique developmental trajectories of human and monkey cells within chimeric embryos. These results may help to better understand early human development and primate evolution and develop strategies to improve human chimerism in evolutionarily distant species.

Graphical abstract



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Keywords

[pluripotent stem cell](#) •

[human extended pluripotent stem cells](#) •

[ex-vivo-cultured mokey embryos](#) •

[interspecies chimera](#) •

[human-monkey chimeric embryo](#)

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