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Novel role for CXCR2 in human pluripotent stem cells

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Basic fibroblast growth factor (bFGF) is a crucial factor sustaining human pluripotent stem cells (hPSCs). We designed this study to search the substitutive factors other than bFGF for the maintenance of hPSCs by using human placenta-derived conditioned medium without exogenous bFGF (hPCCM-), containing CXCR2 ligands including IL-8 and GROα, which was developed on the basis of our previous studies. Firstly, we confirmed that IL-8 and/or GROα play independent roles to preserve the phenotype of hPSCs. And, we tried CXCR2 blockage of hPSCs in hPCCM- and verified the significant decrease of pluripotency-associated genes expression and the proliferation of hPSCs. Interestingly, CXCR2 suppression of hPSCs in mTeSR™1 containing exogenous bFGF decreased the proliferation of hPSCs with maintaining pluripotency characteristics. Lastly, we found that hPSCs proliferated robustly for more than 35 passages in hPCCM- on a gelatin substratum. Our findings suggest that, CXCR2 and its related ligands might be novel factors comparable to bFGF supporting the characteristics of hPSCs and hPCCM- might be useful for a unique feeder-free humanized culture system supporting hPSCs maintenance as well as for the accurate evaluation of CXCR2 role on hPSCs without the confounding influence of exogenous bFGF.

Biography

Ji-Hye Jung is a Ph.D student at the Department of Biomedical Science, Graduate school of medicine, Korea University, Korea. She has interest and experiences in Human embryonic stem cells (hESCs), induced pluripotent stem cells (iPSCs) and Adult stem cells and published her study on SCI journals. Currently, she focused on the mechanisms of self-renewal and differentiation in hESCs and iPSCs.

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