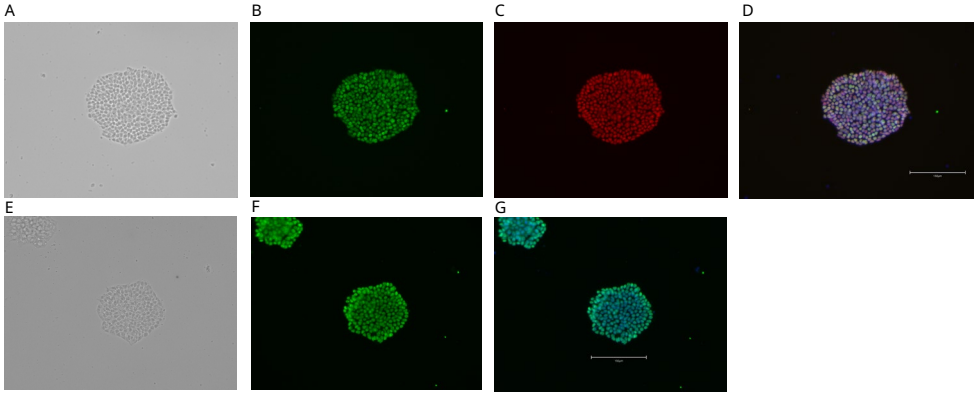
Weekend-free human induced pluripotent stem cell culture using thermostable FGF-2 (bFGF) and animal origin-free TGF-β1 for improved colony homogeneity

Technote
FGF2-G3 (Qk053)
TGF-β1 PLUS (Qk010)



ICC of pluripotency markers in iPSC grown in E8-like media with FGF2-G3 and TGF-β1 PLUS.

iPSC were cultured for 1 month with twice weekly media changes with 40ng/ml FGF2-G3 (Qk053) and 2ng/ml TGF-β1 PLUS (Qk010). Brightfield image (A), NANOG expression, (green,B), OCT-4 expression (red, C), combined NANOG, OCT-4 and Hoechst 33258 (E, scale bar = 150µm)

Introduction

Feeder-free human induced pluripotent stem cell (iPSC) culture is a highly repetitive and routine process that can be costly due to the requirement for daily media changes. To maintain pluripotency iPSC need to have two core intercellular communication growth factors, Fibroblast growth factor 2 (FGF-2) and transforming growth factor β1 (TGF-β1) present at precise concentrations. However, to achieve this in an *in vitro* setting can be challenging due primarily to the rapid degradation of FGF-2, which has an effective half-life of <10h, resulting in the requirement for daily media changes. Qkine thermostable FGF2-G3 (Qk053) and TGF-β1 PLUS (Qk010) reduce the need for daily media changes while preserving cell exposure to required growth factors.

Results

1 – iPSCs cultured in E8-like media with Qkine thermostable FGF2-G3 (Qk053) and TGF-β1 PLUS (Qk010) retained their phenotype for over 1 month, with twice weekly passaging and media changes.
2 - iPSC retained their pluripotent potential by expressing high levels of the pluripotency markers NANOG, SOX2 and OCT-4.

Conclusion

Qkine thermostable FGF2-G3 (Qk053) and TGF-β1 PLUS (Qk010) growth factors prevent the need for daily media changes, enabling weekend-free maintenance and expansion while preserving the cells' pluripotency and proliferative potential.