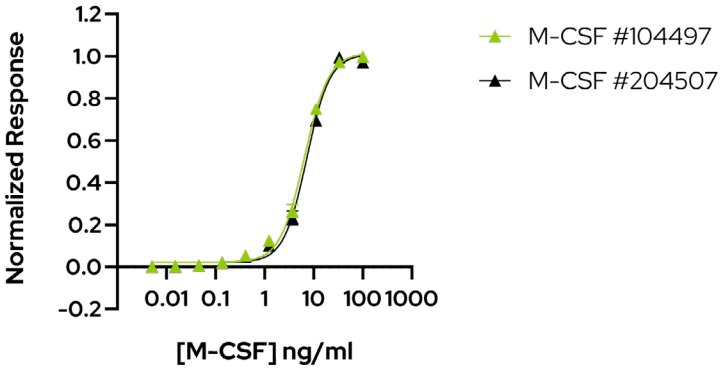
Technote

M-CSF has exceptional lot-to-lot consistency



Quantitative luciferase reporter assay shows that both batches of human M-CSF have a consistent EC50 of 6.5 ng/ml and 7.2 ng/ml respectively (176 pM and 196 pM). Data from Qk075 lot #104497 and #204507.

Introduction:
Macrophage colony-stimulating factor (M-CSF) is a cytokine that regulates the survival, proliferation, and functional activation of monocytes such as macrophages and dendritic cells. In hematopoietic stem cell culture, it is essential for the maintenance and differentiation of human induced pluripotent stem cell-derived monocytes and macrophages. Animal-free growth factors can ensure that cell cultures are more reproducible as they have increased lot-to-lot consistency and reduced risk of endogenous contamination from animal-derived proteins. Qkine has developed a carrier-free and tag-free M-CSF expressed in *E. coli* to ensure consistent bioactivity.

Method:
The bioactivity of M-CSF is determined using the proliferation of NFS-60 mouse myeloid leukemia cells. Cells are treated in triplicate with a serial dilution of M-CSF for 48 hours. Cell viability is measured using the CellTiter-Glo (Promega) luminescence assay and normalized.

Results and conclusion:
The bioactivity for multiple lots of M-CSF protein expressed in *E. coli* showed they have a highly similar EC50 value. The exceptional lot-to-lot consistency of M-CSF makes this bioactive protein suitable for the reproducible culture of macrophages and other relevant hematopoietic cells.