R-10. A chimeric gene of osteocalcin gene promoter and luciferase gene

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The aim of this study is to make a chimeric gene consisted of osteocalcine promoter gene and luciferase gene. The promoter region of mosue osteocalcin gene 2 (mOG2), the best-characterized osteoblast-specific gene, was inserted in promoterless luciferase reporter vector. To confirm expression of reporter gene, the chimeric gene was transfected into MC3T3-E1 cells and the gene expression were evaluated by Luminometer, LAS and confocal laser scanning microscope. To evaluate relationship between the reporter gene expression and osteoblastic differentiation, the chimeric gene is transfected into MC3T3-E1 cells. The cells were incubated with or without BMP-2 for 3days. The osteocalcin production from the cells and luciferase activity were measured. To monitor gene expression according to osteoblstic differentiation on biomaterials, utilizing a real-time molecular imaging system, the MC3T3-E1 cells were seeded on Ti disc and transfected with the chimeric gene. The cells were observed by Luminometer and LAS.

These studies demonstrated that the chimeric gene were reliable quantitative detection tool for osteoblastic differentiation. The chimeric gene may be useful tool for monitoring biomaterial reaction in in vivo at real-time.

Key words: osteocalcin, luciferase, chimeric gene, osteoblast

This study is supported by the grant of Ministry of Science & Technology (Regenomics, M10528010004-06N2801-00410).