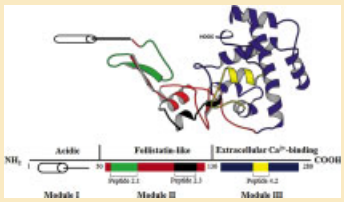
FEATURES

VOLUME 115 • NUMBER 1

Journal of Cellular Biochemistry

ACCEPTED MANUSCRIPT ONLINE 13 AUGUST 2013



There is a growing socioeconomic recognition that clinical bone diseases such as bone infections, bone tumors and osteoporotic bone loss mainly associated with ageing, are major issues in today's society. SPARC (secreted protein, acidic and rich in cysteine), a matricellular glycoprotein, may be a promising therapeutic target for preventing or treating bone-related diseases. In fact, SPARC is associated with tissue remodeling, repair, development, cell turnover, bone mineralization and may also participate in growth and progression of tumors, namely cancer-related bone metastasis. Yet, the function of SPARC in such biological processes is poorly understood and controversial. The main objective is to review the current knowledge related to the activity of SPARC in bone remodeling, tumorigenesis, and bone metastasis. Progress in understanding SPARC biology may provide novel strategies for bone regeneration and the development of anti-angiogenic, anti-proliferative, or counter-adhesive treatments specifically against bone metastasis.

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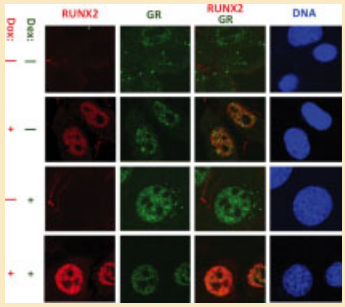

The efficacy of glucocorticoids (GCs) in treating a wide range of autoimmune and inflammatory conditions is blemished by severe side effects, including osteoporosis. The chief mechanism leading to GC-induced osteoporosis is inhibition of bone formation, but the role of RUNX2, a master regulator of osteoblast differentiation and bone formation, has not been well studied. The effects of the synthetic GC dexamethasone (dex) on transcription of RUNX2-stimulated genes during the differentiation of mesenchymal pluripotent cells into osteoblasts are assessed. Dex inhibited a RUNX2 reporter gene and attenuated locus-dependently RUNX2-driven expression of several endogenous target genes. The anti-RUNX2 activity of dex was not attributable to decreased RUNX2 expression, but rather to physical interaction between RUNX2 and the GC receptor (GR), demonstrated by co-immunoprecipitation assays and co-immunofluorescence imaging. Investigation of the RUNX2/GR interaction may lead to the development of bone-sparing GC treatment modalities for the management of autoimmune and inflammatory diseases.