

# Involvement of the Immune-mediated marker (Bone morphogenetic protein) in the Rheumatoid arthritis in Middle Euphrates region/ Iraq.

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- **Abstract:** Rheumatoid arthritis (RA) is a chronic, progressive, inflammatory autoimmune disease associated with articular, extra-articular and systemic effects. The biomarkers that studied in RA were vary and they have significant role in the diagnosis, prognosis of treatment, monitoring of the disease activity, and prediction of the response to biologic therapy. Bone morphogenetic proteins BMPs are a members of the transforming growth factor beta (TGF- $\beta$ ) superfamily and they induce the formation of cartilage and other connective tissues. Also, it can induce bone formation in vitro and at heterotopic sites in vivo. It has been reported their largely important role in embryogenesis, early prenatal skeletal formation and development, further to their associated with a number of human skeletal disorders. The osteogenic BMPs function was proposed through promoting the differentiation and proliferation of mesenchymal stem cells (MSCs) in the bone marrow into bone-forming osteoblasts and enabling the proliferation of osteogenic cells. This paper would track the theoretical role of BMPs in the Skeletal remodelling by looking for the following questions: What is the direct role for osteoclasts in the promoting bone formation, what would be their role in promoting the recruitment, proliferation, and differentiation of osteoblasts. How could this review improve the knowledge regarding the potential therapeutic target of BMPs in the anabolic role of osteoclasts
- **Keywords:** Rheumatoid arthritis, osteoblasts, biologic therapy