

**New Bone Induction by Bone Matrix and Recombinant Human Bone Morphogenetic Protein-2 in the Mouse**

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**Aim.** To evaluate osteogenic capacity of mouse and rat bone matrix preparations and recombinant human bone morphogenetic protein (rhBMP-2) in the mouse.

**Method.** Demineralized bone matrix or bone matrix gelatin were implanted intramuscularly in C57BL/6 mice, and the formation of new bone was histologically evaluated. Allogeneic and xenogeneic (rat) bone matrix was also implanted in C57BL/6, CBA, and BALB/c mice. rhBMP-2 was implanted subcutaneously into C57BL/6 mice, with blood clot as a delivery system for BMP, and the new bone induction evaluated histologically.

**Results.** Bone induction by different preparations of mouse bone matrix gave inconsistent results in the syngeneic combination, with only 13% induction of bone or cartilage by preparations that otherwise maximally preserve the osteogenic potential of the mouse bone matrix. Mouse strains were also found to differ in the intensity of inflammatory reaction to allogeneic or xenogeneic (rat) bone matrix. rhBMP-2 gave consistent and reproducible bone induction when implanted in a mixture with coagulated syngeneic blood.

**Conclusion.** Preparations of syngeneic mouse matrix were poor osteoinductors, which can be explained, apart from the specificities of the mouse matrix, by the difference in inflammatory reaction among inbred mouse strains. In contrast, the mixture of rhBMP-2 and syngeneic blood seems to be a simple, reliable and reproducible model of osteoinduction in the mouse.

**Key words:** bone development; bone morphogenetic protein; mouse; osteogenesis