



Invited Plenary Abstract

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Anabolic agents – approaches to The Holy Grail for Bone

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We have spent some years attempting to find stimulators of bone formation that could be used in the common diseases of bone loss. One of the observations that we have made is that the bone remodeling cycle shares a number of characteristics in common with the hair follicle cycle. In both, there are phases of growth, resorption or regression, and rest. Moreover, the regulatory controls of both hair follicle and bone remodeling cycles involve many of the same extracellular and intracellular factors. For example, both anagen (the growth phase of the hair cycle) and the bone formation phase of the bone remodeling cycle are controlled by the BMP-2 ligand-signal transduction pathway and downstream molecules such as Wnt and beta-catenin. We have gathered evidence for this notion using a number of small molecules that stimulate BMP2 transcription and determining their effects both on anagen induction in the hair follicle and on bone formation. There has been perfect concordance. This suggests that there are common molecular mechanisms that control cycling tissues in the hair follicle and in the bone remodeling unit, and that manipulation of this pathway therapeutically may have multiple unexpected effects.