



Adapted from Jeffcott, 1991.

Figure 1.6. The regulation of bone growth is orchestrated by the actions of many hormones and growth factors. Research indicates that insulin may play a role in the stimulation of chondrocytes from resting to proliferative (McCumbee and Lebovitz, 1980). Insulin-like growth factor (IGF-I) and transforming growth factor- β (TGF- β) promote the hypertrophy of proliferating chondrocytes (Rosen et al., 1994; Thorp et al., 1995a). Thyroid hormones (THs) may be involved in the maturation of chondrocytes (Spencer, 1989; Root, 1990), and IGF-I has been implicated in apoptosis. Mineralization of cartilage occurs in the presence of alkaline phosphatase (AP), Ca^{2+} , and PO_4^- from the extracellular matrix vesicles (Wuthier, 1982), and TGF- β may also be involved.