



Fig. 5. Mechanism of bone remodeling. After the signal molecules are transported to the bone surface, osteoprogenitor is stimulated to divide and differentiate into osteoblasts which can produce new bone matrix.

nylate cyclase, and c-AMP is formatted. Increasing the amount of PGE₂, c-AMP, and Ca²⁺ can raise the concentration of insulin-like growth factor.

Messengers released in the cytoplasm (such as Ca²⁺) can move to the other bone cells through an extensive network of cellular processes connected at gap junctions, and the messengers (such as PGE₂) released into the extracellular space can transport by means of extracellular fluid flow. Then, a rise in IGF can stimulate cellular DNA of bone cell and activate the process of remodeling and proliferation. However, osteocytes and bone lining cells cannot proliferate or produce new bone matrix; therefore, the message molecules stimulate osteoprogenitor cells on the bone surface to divide and differentiate into preosteoblasts. The preosteoblasts continue to differentiate into osteoblasts which can produce new bone matrix (Fig. 5).³⁹

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