Drug Development in Bone Metabolism Research

M-3

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Osteoporosis is a systemic and progressive disease associated with reduction of bone mass through disturbance of bone metabolism. Bone mass is usually coordinated by delicate balance between bone-forming osteoblasts and bone-resorbing osteoclasts, while an imbalance between these two different cells results in specific metabolic bone diseases including osteoporosis, osteopetrosis, and Paget's disease. Osteoporosis often results in bone fracture followed by relatively persistent immobilization and subsequent further decrease in bone mass. In aged patients, furthermore, immobilization due to osteoporosis frequently leads to an increased possibility of other severe disorders such as dementia and sustained akinesia. Chondrocytes not only participate in bone formation through maturation and subsequent replacement with osteoblasts after apoptotic death, but also contribute to the formation of articulation together with synoviocytes. Both osteoarthritis and rheumatoid arthritis are believed to involve chronic pain related to malfunction of articulation through degeneration of chondrocytes. This symposium will summarize recent studies on the mechanisms underlying the maintenance and modulation of bone and articulation in the pharmaceutical field to devise a basic theory of orchestration, which will be useful for future discovery and development of drugs for the prevention as well as therapy of these diseases of bone tissue.