

## Invited Speaker Abstract

IS7

### **Fat and Bone: An Odd Couple**

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The fat and bone connection plays an important role in the pathophysiology of age-related bone loss. There are two types of bone and fat connection namely systemic and local. The “systemic connection”, usually seen in obese patients, is hormonally regulated and is associated with high bone mass and strength. The “local connection” happens inside the bone marrow. Increasing amounts of bone marrow fat affect bone turnover through the inhibition of osteoblast function and survival, and the promotion of osteoclast differentiation and activation. This interaction is regulated by paracrine secretion of fatty acids and adipokines. Additionally, bone marrow fat could be quantified using noninvasive methods and could be used as a therapeutic approach due to its capacity to transdifferentiate into bone without affecting other types of fat in the body. This session will focus on the age-induced mechanisms that regulate the predominant differentiation of mesenchymal stem cells into adipocytes, the hormonal interaction between body fat and bone, and the mechanisms of lipotoxicity within the bone marrow milieu. Additionally, bone marrow fat will be considered from a diagnostic and therapeutic perspective.