

# IAEA/ESNM Webinar Series on basic NM

## The (Patho)physiology of Bone Turnover

### Learning Objectives

The objective of this webinar is to provide the participant with a concise overview of the physiology and cell biology of bone turnover, as well as to illustrate the pathophysiological mechanisms of a number of common bone diseases:

1. Understand the major functions of bone
2. Know the difference between and function of bone modelling and remodelling
3. Be able to describe the origin, function, and regulators of osteoblasts, osteoclasts, and osteocytes
4. Be able to describe the two mechanisms of bone formation (intramembranous and endochondral)
5. Understand the hierarchical regulators (local and central) of bone turnover and be able to describe the role of the key regulators (RANKL, PTH, OPG, BMP, vitamin D, calcitonin, and hormones)
6. Know the different stages of fracture healing
7. Understand the effects of ageing on bone
8. Be able to describe the role of the immune system in osteoporosis
9. Know the key mediators involved in rheumatoid arthritis
10. Understand the role of the osteoblast as antigen presenting cell in osteomyelitis
11. Be able to explain the “vicious cycle” of bone destruction in bone metastatic cancer
12. Understand the concepts of osteomimicry and the pre-metastatic niche