

Osteoblast Differentiation and Bone:

Relevant proteins, regulatory processes and the vascular connection

PROPOSITIONS

1. For the development of biomarkers for osteoporosis it is crucial to first characterize the bone tissue and the cells that synthesize it, the osteoblasts (*this thesis*).
2. Proteomics studies have limited potential when protein fractionation is not contemplated (*this thesis*).
3. 10% of bone extracellular matrix (ECM) proteins hold more biological information than the remainder 90% (*this thesis*).
4. The ECM produced by osteoblasts contains potent osteoinductive properties and is a strong determinant of MV-dependent osteoblast mineralization (*this thesis*).
5. Vascular calcification by VSMC is not a facsimile of osteoblast differentiation and mineralization (*this thesis*).
6. Bone is a fossilized organ containing within its ECM information from past biological activities.
7. Mass spectrometry-based proteomics is a revolutionary research tool delivering data beyond our level of comprehension. Thus, studying proteomes is rediscovering biological complexity.
8. Bioinformatic resources are a potential source of bias for researchers.
9. Bone mineral density (BMD) measurements are not an ideal method to diagnose osteoporosis because they overlook the most important determinant of bone tissue quality, the organic ECM content.
10. In Portugal there is potential without conditions for developing it. In the Netherlands there are conditions waiting for people with potential.
11. People often ask me when I will stop smoking. Maybe I should ask them back when they will stop eating junk food.

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