Characterization of human bone cells in culture

A. Toesca¹, A. Pagnotta², N. Specchia²

¹ Institute of Human Anatomy, Catholic University, Rome, Italy and ² Department of Orthopedic Surgery, University of Ancona, Ancona, Italy.

Key words: osteoblast, cell culture, immunohistochemistry, scanning electron microscopy, PTH

SUMMARY

Osteoblast-like cells isolated from human bone bioptic specimens were established in culture. Their osteoblast-like phenotype was studied by biochemical, histochemical and immunohistochemical methods and by electron microscopy examination.

Third-passage cell cultures exhibited high level of alkaline phosphatase activity and the exposure to human parathyroid hormone produced an increase of intracellular cAMP. Cultured cells were immunoreactive for type I and type III collagen, osteonectin, and fibronectin; when ascorbic acid and β-glycerophosphate were added, they synthesized a rich extracellular matrix. This characterization ensures the reliability of osteoblast-like cultures when they are used as experimental models.