3D Microelectrode Geometry Effects the Multilayer Dense Osteo Intra-organelle Membrane Potential Characterization

Abstract

We report the computational simulation study for the characterization of multilayer dense osteoblast intra organelle membrane potential in different microelectrode. The response of a cell model at various frequencies and the effect of cell parameters, such as cell membrane resistance and capacitance, were studied. We show that at low frequencies—the intra organelle can be electro porated while at high frequencies, the induced potential can be much lower than that at low frequencies at same applied voltage for dense osteo cells. we also find out that the induced TMP of osteoblast cell depends not only on its radius and geometry of the microelectrode but also the resistances and capacitances of suspending medium, which effects the dielectric property of osteoblast cell.

References


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**Index Terms**

Computer Science Electronics

**Keywords**

Dense cell Osteoblast cells Simulation Electroporation cytoplasm Nucleolus Frequency Response
Intra-organelle potential.