1. Can the changes in the gel architecture that result in making gel relaxation time close to that of viscoelastic tissues be made simultaneously while keeping the gel Young’s modulus constant? Explain.

Different changes could be made in the gel architecture to allow tuning the stress relaxation time close to the ones observed in viscoelastic tissues while maintaining the gel Young’s modulus constant:

* Lowering the molecular weight of alginate hydrogel in combination with different crosslinking densities of calcium, reduces entanglement and network connectivity, and produces faster stress relaxation. Introducing PEG space in the gel architecture further increases the rate of stress relaxation.
* Any reduction in the initial gel’s Youn’s modulus resulting from the reduction in gel molecular weight can be compensated by increasing ionic crosslinking using calcium.

1. Discuss the main features of osteogenic differentiation of stem cells sitting on modified gels of greater stiffness.
2. What changes in the gel architecture result in making gel’ relaxation time close to that of viscoelastic tissues?
3. Sketch the main steps of cell/ECM interaction in the cases of elastic and viscoelastic matrices.
4. Do stem cells sitting on the modified gels significantly increase their spreading and proliferation? Explain.