One of the open issues in the Tissue Engineering area is whether scaffolds are needed at all to regenerate many tissue defects. This is a fundamental question that may be answered by providing clear evidence of success by scaffold-less tissue regeneration strategies. In its absence, many groups within this research community are focused in the development of scaffold-dependent strategies.

Natural-based biomaterials have been proposed and explored to meet the requirements of many applications in the Tissue Engineering and Regenerative Medicine. Among the important characteristics of those biomaterials it should be highlighted the easy biodegradation by normal metabolic pathways, the low cytotoxicity and low immunogenic reaction upon implantation and the myriad of properties obtained by combination of those materials with other biodegradable polymers. This later strategy has been pursued in our lab in the quest to obtain scaffolds that effectively help, assist and drive cells to regenerate connective tissues.

Many sources of cells have been considered for tissue engineering. Embryonic and adult stem cells are among the most promising to achieve the cell numbers required to have therapeutic relevance. The ethical and political constraints surrounding embryonic stem cell line derivation led most research efforts to concentrate in adult stem cells. We have been using adult stem cells from different sources for bone and cartilage tissue engineering applications.

This presentation will review our latest developments in tissue engineering of bone and cartilage using natural-based biodegradable scaffolds with relevant cells both *in-vitro* and *in-vivo*.

(OP 33) Biological Performance of Natural-Based Polymers for Tissue Engineering Scaffolding

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