

Shaping calcium phosphate ceramics for osteoinduction

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β -Tricalcium Phosphate (β -TCP) is a highly potent ceramic for bone repair: once placed in a bone defect, it is resorbed according to the natural bone resorption process, and replaced by new bone. However, this is not true anymore when bone defects are (too) large or if the patient has an unfavorable metabolism. In that case, it is advantageous to have materials able to trigger an osteoinductive response, i.e. the differentiation of stem cells into bone cells. This “osteoinductive” property can be enhanced by maximizing the volumetric rate of in vivo mineralization, a parameter highly depending on the geometry of the calcium phosphate. The aim of my presentation is to introduce the mechanism by which mineralization can trigger osteoinduction [1-2] and then discuss approaches and limitations to design more potent osteoinductive calcium phosphate ceramics.

[1] Böhner and Miron, Mater Today, 2019. [2] Böhner et al, Acta Biomaterialia, 2022.