

# TITLE: BIOCERAMIC MATERIALS FOR TREATMENT OF OSTEOMYELITIS

## FIELD OF INTEREST

Biomaterials (Inflammatory Diseases, Bone Diseases, Autoimmune Disorders)

## CLINICAL NEED

The conventional clinical treatment of Osteomyelitis includes a dual medical surgical approach with the administration of antibiotics for long-term treatment and extirpation of devitalized bone tissue using a filler material stimulating the growth of new bone tissue. Extirpation of necrotic tissue is an essential procedure, but the intravenous and/or oral administration of antibiotics for 4 to 6 weeks has the drawback of spreading the antibiotics throughout the patient's body. This, along with the need of high doses due to the difficulty of the antibiotic in reaching the bone, means that there are more likely potential side effects. All this does not only entail discomfort for the patient but rather a high economic cost. Therefore, considering alternative strategies for the treatment of osteomyelitis remains a challenge today.

## DESCRIPTION OF THE INVENTION

The present invention is encompassed within the technical field of the manufacture of materials for bone implants with controlled-release of bioactive agents. More specifically, the invention relates to the manufacture of ordered mesoporous silica materials that promote bone development while at the same time release antibiotics for treating bone infection. Therefore, these new materials can be used in clinical cases of bone infection such that the local release of a combination of antibiotics and they allow mitigating the systemic dose of antibiotics conventionally used in the treatment of these diseases. In addition to allowing high concentrations of antibiotic agents at the site of implant, biodegradable materials do not require a second intervention in order to remove same.

The proposed mesoporous silica-based material prevent and/or treat a possible bone infection with a bone filler material that is biodegradable, biocompatible, with osteoconductive, osteoinductive and osteogenic properties while at the same time allows the controlled-release of antimicrobial agents.

## TECHNOLOGY KEYWORDS

Osteomyelitis, Implants, Bioceramics, Bioactive, Antibiotics

## IPR STATUS

Patent application number P201100655

Applicants: UCM, IIS-FJD.

## TYPE AND ROLE OF PARTNER

Looking for commercial partners interested in licensing.

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