

## Medical Devices

# Resorbable membrane for guided bone regeneration

A research group of the Andalusian Public Health System, in collaboration with the Spanish National Research Council (CSIC), the University of Seville and the University of Cádiz, has developed a film or membrane with a suitable stability and degradation rate, which allows guided bone regeneration (GBR) without removing the implanted material.



## Description

The bone tissue healing is much slower than in the mucosa, and after a surgical operation where a quick wound healing is desirable, particularly after oral or dental surgery, it is difficult to provide conditions which prevent growth of other tissues into the area where regeneration is required.

The technique known as guided bone regeneration (GBR) tries to resolve these difficulties by promoting the formation of bone tissue over connective and epithelial tissues during the healing. Currently, two types of membrane are used for GBR: synthetic non-resorbable and resorbable membranes. The disadvantage of the first type is that requires a second surgical operation for its removal, and the latter often produces an irritant effect undesirable for the patient. Conventional methods of synthesis for degradable "films" and biodegradable polymers such as polylactic or polyglycolic acids, or mixtures thereof, are well known. However, the degradation rate in the physiological environment of materials prepared by these methods cannot be easily controlled, resulting in a degradation rate generally slower than that required for GBR.

Therefore, there is an unmet medical need of developing a biodegradable resorbable membrane with a suitable stability and degradation rate, which allows guided bone regeneration (GBR) without removing the implanted material. The present offer provides a membrane comprising a biodegradable polymer which is activated in one or both sides by exposure to an oxygen plasma or other active gas generated in a conventional plasma reactor. As a result of this procedure, a resorbable membrane with controlled rate of degradation in the physiological environment is obtained.

1. The technology includes a resorbable biodegradable polymeric film or membrane, (suffer hydrolysis on contact with the physiological medium), sufficiently stable, high design flexibility, with an adaptable composition and structure depending on the specific needs.
2. Additionally, the obtained membrane has nanotechnological characteristics that can improve the implants bioactivity for promoting their *in situ* conduction and osteo-induction in the patient and osteoprogenitor cells. Consequently, the osteointegration between the implant and the surrounding bone is improved.
3. The present technology also includes a process of synthesis where the degradation rate of the "film" polymer can be controlled by varying the activation time of the polymer treatment



## Intellectual Property

This technology is covered by a Spanish patent application with the possibility of international extension.



## Aims

We are looking for a partner interested in a license and/ or a collaboration agreement to further develop and exploit this innovative technology.



## Advantages



## Classification

Area: Medical device