



Partner search for call

FP7-NMP-2013-Large-7

Proposal name: [Nanotherapeutics to treat medical device-related infections](#)

Proposer: A large biotech company based in Milan

Abstract:

Implants failures caused by infections are among the most critical issues in orthopaedics in terms of morbidity and associated clinical costs (far beyond \$50000 per event). Infections lead to longer hospitalization and higher risks caused by additional surgical and antimicrobial treatments. Bacteria grow in biofilms that are highly organized extracellular matrixes containing interstitial water channels for the circulation of microbial cells nutrients Bacteria release signalling molecules (quorum sensing mechanism), through which they change gene expression patterns causing biofilm differentiation. One of the most frequently adopted solutions against infections is the addition of antibiotics-releasing coatings to implants surfaces. However, bacteria may resist to antibiotics and this issue is considered one of the most critical challenges of the 21st century. In fact, the mechanism of action of antimicrobial drugs is based on killing bacteria cells or inhibiting their growth, encouraging the microorganisms to evolve and reinforce their defences, which with time makes antibiotics less effective.

Proposal description

The proposal is to offer a novel solution for attenuation of Quorum Sensing and therefore prevention of virulence and biofilm formation, which involves sequestering the signal molecules using molecularly imprinted polymers, MIPs. MIPs are polymers, which possess recognition capabilities for the analyte of interests. Therefore, during this project, MIPs specific for the signal molecules produced by the bacteria involved in devices infections will be developed. Using MIPs, signal molecules will be adsorbed and removed from the system, reducing their concentration below the threshold for quorum sensing, leading to disruption of communication between individual bacteria. The ability to disrupt this communication should prevent the bacteria from releasing toxins or forming sticky, drug-resistant biofilms.

Keywords:

Nanotherapeutics/Infections/Bacteria/Nanomaterials/Nanoparticles

Deadline for the partner search:

31/07/2012

Characteristics of potential partners :

Required skills and Expertise:

The requested partner should have expertise in manufacturing of Medical Devices

Tasks to be carried out by the partner(s) sought:

Design and manufacture a new and innovative medical devices which the MIPs-based coating could be applied on

Type of partner(s) sought:

Sme's

Preferred countries:

Austria, Belgium, Denmark, Finland, France, Germany, Sweden, Israel, Norway, Switzerland.

The Proposer is looking for a Coordinator: NO

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