

17<sup>th</sup> International Conference and Exhibition on

## NANOMEDICINE AND NANOTECHNOLOGY IN HEALTHCARE

November 23-24, 2017 Melbourne, Australia

***N Benkirane-Jessel****University of Strasbourg, France***Combined therapeutic medical device and stem cells for regenerative nanomedicine**

In our group we explore a new generation of smart living implants combining not only active therapeutic but also stem cells, as a novel strategy to regenerate stabilized cartilage and avoid prosthesis by achieving regeneration of its sub-chondral bone foundation, requirement which is failing today in the clinic. In our group, a unique nanotechnology strategy is used to entrap, protect and stabilize therapeutic agents into polymer coatings: Nano-reservoirs, covering nano-fibers of implantable nano-fibrous membranes for bone and cartilage regeneration. Upon contact with cells, therapeutic agents become available through enzymatic degradation of the nano-reservoirs. As cells grow, divide and infiltrate deeper into the porous membrane, they trigger slow and progressive release of therapeutic agents that, in turn, stimulate further cell proliferation. The nano-reservoirs technology enables to reduce the quantities of required therapeutic agent (compared to soaked membranes for instance) thereby reducing costs. Feasibility and safety assessment of a therapeutic implant based on an active polymeric wound dressing and autologous mesenchymal stem cells derived from bone marrow for the treatment of femoral cartilage isolated lesions.

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