

Nanomedicine & Healthcare

November 06-07, 2017 | New Orleans, USA



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 therapeutics but also stem cells, as a novel strategy to regenerate stabilized cartilage and avoid prosthesis, by achieving regeneration of its subchondral 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: Nanoreservoirs, covering nanofibres of implantable nanofibrous membranes for bone and cartilage regeneration. Upon contact with cells, therapeutic agents become available through enzymatic degradation of the nanoreservoirs. 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 nanoreservoirs technology enables to reduce the quantities of required therapeutic agent (compared to soaked membranes for instance) thereby reducing costs.

Speaker Biography

N Benkirane Jessel is Research Director and the Head of the "Osteoarticular and Dental Regenerative Nanomedicine" laboratory, at INSERM (French National Institute for

Health and Medical Research), UMR 1109, Strasbourg, France. She was the Leader of "Active Biomaterials and Tissue Engineering" team INSERM 977. She has received her PhD from University Louis Pasteur, ULP, Strasbourg, France for the work on Development of pseudopeptides as synthetic vaccines. Dr. Jessel (Benkirane) then held a postdoctoral position in collaboration with the Institut Pasteur, Paris, France, working on Immunotherapy HIV, and another Postdoctoral position on the application of modified peptides as vaccines against FMDV (Plum Island Animal Disease Center, ARS, USDA, Greenport, NY 11944-0848, USA). She joined the INSERM U595 in 2002 as a post-doc, and received the diploma to direct the research (HDR) in 2004. Dr. Jessel got the permanent position (CR1) in the INSERM 595 laboratory in 2004 and Research Director (DR2) position in the INSERM 977 and head of "active Biomaterials and Tissue Engineering team from 2009 until 2012). Currently Research Director (DR1) in the INSERM UMR 1109 (Osteoarticular and Dental Regenerative Nanomedicine" and heads the team. Dr. Jessel possesses expertise in diverse fields of molecular and cellular biology, immunochemistry, tissue engineering and biomedical engineering. In the last 10 years, she focused her research on the bio-functionalization of multilayered polyelectrolyte architectures with emphasis on the use of these architectures to induce specific cellular responses and gain control over cell proliferation and differentiation. Dr. Benkirane-Jessel have 138 publications (h index: 36) with peer-reviewed publications in high impact factor journals (Proc. Nat. Acad. Sci. USA; Adv. Mater.; Adv. Funct. Mater. Small; Nanoletters, Biomaterials, ACS Nano), 5 chapters reviews and 5 international patents, she is a regular referee for a number of scientific journals (Nature nanotechnology, Nature Materials, ACS nano, Biomaterials, Nanoletters...). She is under the contract (Interface INSERM/Clinic 2008-2013) and she got also "Prime d'Excellence Scientifique" from the INSERM, 2010-2014 and the PEDR from the INSERM on 2016 for 4 years.

e: Nadia.jessel@inserm.fr

 Notes: