

Current concepts in tissue engineering for neural repair

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Interest in the improvement of neural repair by means of tissue engineering is continuously increasing and, similarly to many other fields of regenerative medicine, great expectations have risen within the general public to its potential clinical application in the treatment of damaged nervous system, including spinal cord. However, in spite of the scientific advancements, applications to the patients is still limited and it appears that to optimize tissue engineering strategies for neural repair in the clinical view, more basic science research is needed and neuroscientists have to strive for a new level of innovation which will bring together (in a multi-translational approach) the main pillars of tissue engineering, namely 1) Microsurgery, 2) Transplantation (of tissues, cells and genes), 3) Material science, 4) Physical therapy. In this presentation, we will provide an brief overview of last advancements in tissue engineering for neural repair in order to throw a light on the most promising future perspectives in combining the different strategies for improving posttraumatic recovery of the nerve tissue. In particular, we will focus on cell and tissue transplantation and on how its efficacy could be improved if included in the context of a multilevel tissue engineering approach.