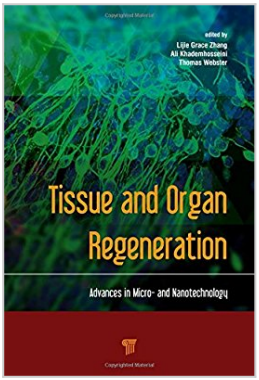

Tissue and Organ Regeneration: Advances in Micro- and Nanotechnology

From Pan Stanford

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Tissue engineering aims to develop biological substitutes that restore, maintain, or improve damaged tissue and organ functionality. To date, numerous stem cells and biomaterials have been explored for a variety of tissue and organ regeneration. The challenge for existing stem cell–based techniques is that current therapies lack controlled environments that are crucial for regulating stem cell engraftment and differentiation *in vivo*, because stem cells are rather sensitive to even minute changes in their environment. Micro- and nanotechnology hold great potential to fabricate biomimetic spatiotemporally controlled scaffolds as well as control stem cell behavior and fate by micro- and nanoscale cues.

This book presents the latest micro- and nanotechnologies used to manipulate stem cell behaviors, which is a critical area for regenerative medicine. Moreover, it covers and details cutting-edge research in nano- and microfabrication techniques and biomaterials for the regeneration of various tissues and organs, such as bone, cartilage, craniofacial, osteochondral, muscle, bladder, cardiac, and vascular tissues.

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