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What's new in bone tissue engineering through 3D bioprinting of bioceramic scaffolds**AK Taha***Chengdu University, China*

Trauma and bone loss from infections, tumors, and congenital diseases make bone repair and regeneration the greatest challenges in orthopedic, craniofacial, and plastic surgeries. The shortage of donors, intrinsic limitations, and complications in transplantation have led to more focus and interest in regenerative medicine. Structures that closely mimic bone tissue can be produced by this unique technology. The steady development of three-dimensional (3D)-printed bone tissue engineering scaffold therapy has played an important role in achieving the desired goal. Bioceramic scaffolds are widely studied and appear to be the most promising solution. In addition, 3D printing technology can simulate mechanical and biological surface properties and print with high precision complex internal and external structures to match their functional properties. Inkjet, extrusion, and light-based 3D printing are among the rapidly advancing bone bioprinting technologies. Furthermore, stem cell therapy has recently shown an important role in this field, although large tissue defects are difficult to fill by injection alone. The combination of 3D-printed bone tissue engineering scaffolds with stem cells has shown very promising results. Therefore, biocompatible artificial tissue engineering with living cells is the key element required for clinical applications where there is a high demand for bone defect repair. The importance of this presentation lies in that it aims to briefly review the main principles and characteristics of the currently available methods in orthopedic bioprinting technology to prepare bioceramic scaffolds, and finally discuss the challenges and prospects for applications in this promising and vital field.

Biography

A Taha is a Professor and External Advisor from New Zealand and High-end Foreign Expert at Widad University College & Chengdu University, China. His research results have been published in more than 50 papers in international journals and conferences, including various SCI/SCIE/IEEE indexing. He received various awards such as Chosen for Who's Who in Medicine and Healthcare 2010. He is currently an editor board member for several international journals.