

3D printing technology application for tissue engineering

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Abstract

Statement of the Problem: Patients with organ failure often suffer from increased morbidity and decreased quality of life. Current strategies of treating organ failure have limitations, including shortage of donor organs, low efficiency of grafts, and immunological problems. So, evolution of novel technicalities in biomedical engineering has aided to promote numerous prospects for modern stands for transplant trials. **Methodology & theoretical orientation:** 3D printing is emerging as a powerful tool for tissue engineering by enabling 3D cell culture within complex 3D bio-mimetic architectures. Bio printing is an eliciting device for distinguishing stem cells in 3D styles. The use of proper bio-materials with its cross-linking feature on extension of a cross linker allows the perfect building with which we can cultivate stem cells into a certain tissue or organ. **Findings:** Recent advances have enabled 3D printing of biocompatible materials, cells and supporting components into complex 3D functional living tissues. Bio-printing harnesses three dimensional precipitations of cell loaded bio-materials to originate an orderly fabric with tissue suitable building. This kind of engineered organ can display substitutes to donors for organ transplantation and tissue printing could show superior clinical rating of therapeutic factors. Nano-bio-materials function a crucial part in fostering the physicochemical characteristics of subsisting bio-materials. 3D-bioprinted tissue constructs are being developed not only for transplantation but also for use in drug discovery, analysis of chemical, biological, and toxicological agents.

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Biography

Laila M. Montaser MD is a distinguished Prof. of Clinical Pathology. Chair Stem Cell, Regenerative Medicine, Nanotechnology and Tissue Engineering (SRNT) Research Group. She served as the Chair, Founder leader of Clinical Pathology Department, Faculty of Medicine, Menoufia University, Egypt. Prof. Montaser an internationally recognized stem cell technology and regenerative medicine professional is a transformational leader and original thinker who is responsive to change to She has key competence in stem cell technology and regenerative medicine policy

reinforced by global level and international experience in research, formulation and capacity building. She gained three Awards: Medal of Merit for the ideal Doctor from Egyptian Medical Syndicate in 1986, 1998, and 2002. In 2020-2021, she was awarded twenty certificates of appreciation for successfully presenting thirty six Global Webinars (55.6%) for outstanding contribution to the commitment to provide continuing education to the international community from her home office amid the lock-down of COVID-19 crisis.

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