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3D and 4D Bioprinting for Musculoskeletal Tissue Regeneration

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Tissue engineering is an emerging research field with the hope to produce novel therapy options using biomaterials and autologous cells. The joint use of tissue engineering principles with the developments in 3D bioprinting technology possess the potential to produce custom-made tissues and organs in the laboratory. Along with providing perfect anatomical fit, 3D bioprinting holds the promise to produce living and functional human tissues and organs with some pioneering work already translated into the clinic. Our experience with 3D printing biodegradable polymeric scaffolds and consequent in vitro and in vivo studies have shown that scaffold internal architecture as well as functionalization with mesenchymal stem cells and nanoparticulate controlled growth factor delivery system holds great promise in the regeneration of bone tissue. This talk will give brief information about this experience as well as the biomimetic strategies we have developed to engineer functional skeletal muscle constructs including 3D and 4D bioprinting.

Dr. Huri is currently an Associate Professor of Biomedical Engineering at Ankara University. She held a postdoctoral appointment at Johns Hopkins University School of Medicine prior to joining Ankara Uni. She received her Ph.D. degree from METU and was also awarded an Integrated European Ph.D. within the scope of FP6 Network of Excellence Expertissues. Her research is in the area of tissue engineering and regenerative medicine including stem cell research and engineering of bio-inspired systems mainly using 3D printing technology. She is particularly interested in the development of functional biomaterial platforms to enhance tissue regeneration characteristics that would lead to translatable therapies, with 2 translated products and several issued and pending patents. Dr. Huri's research achievements include several awards such as, METU Parlar Award (2018), TÜSEB Aziz Sancar Incentive Award (2017), TÜBA GEBİP Award (2016), BAGEP Award (2015) and The American Society for Bone and Mineral Research Young Investigator Award (2013).

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