

The Regenerative Medicine Initiative In Cardiac Restoration Therapy – A ‘Heart To Heart’ Approach

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Perseverance Room, Enterprise Level 5



Brief introduction:

Professor Marcelle Machluf is the Deputy Executive Vice President for Research for the Pre-Clinical Research Authority, the Head of the Interdepartmental Program of Biotechnology, and a faculty member at Department of Biotechnology & Food Engineering at the Technion – Israel Institute of Technology. Marcelle Machluf holds a PhD degree in biotechnology from the Faculty of Chemical Engineering at Ben Gurion University of The Negev (Beer-Sheva, Israel). Prof Machluf did a five-years post-doctoral fellowship at Harvard Medical School (Boston, MA) where she focused on drug delivery, gene therapy and tissue engineering. Professor Machluf’s laboratory develops and engineers nano-drug and gene delivery systems for cancer therapy. Her lab is also engaged in developing scaffolds for tissue engineering of the heart, blood vessels and pancreas. Professor Machluf has published more than 60 papers and book chapters, and has seven patents in national phase. Prof. Machluf is also heading Singapore Technion Alliance for Research and Technology (START) under the regenerative medicine initiative in cardiac restoration therapy.

Abstract:

Current treatments are inadequate in regenerating severe adult-heart damage, such as occurring during myocardial infarction (MI) – a major worldwide cause of morbidity and mortality, boosting research in myocardial regenerative-medicine. Heart-muscle (Myocardium) tissue engineering aims to restore maintain or improve CF through the use of biomaterial scaffolds applied either as patches or as injectable platforms, with or without additional cellular components of various origins. I will present the Singapore Technion Alliance for Research and Technology (START) also known as the regenerative medicine initiative for cardiac restoration therapy. I will then focus on a few promising approaches developed in our labs which are based on bioactive and natural extracellular matrix (ECM) obtained from decellularization of heart tissues. This material exhibits tremendous efficacy in animal models both as patches as well as injectable platforms contributing to functional improvements even when damage is considered irreversible using current therapies.

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