



Official Journal of TESMA

# Regenerative Research

www.regres.tesma.org.my  
E-ISSN 2232-0822

Tissue Engineering  
and Regenerative  
Medicine Society of  
Malaysia

Regenerative Research 7(1) 2018 41

## INSTRUCTIVE SURFACES AND SCAFFOLDS FOR TISSUE ENGINEERING USING RADIATION TECHNOLOGY

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### ARTICLE INFO

Published: 26<sup>th</sup> August 2018

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### Keywords

Instructive Surfaces;  
Scaffolds;  
Tissue Engineering;  
Radiation

### SUMMARY

**Introduction** Tissue engineering is revolutionising medicine by shifting the focus from addressing symptoms to repair and regeneration. Regenerative medicine is an emerging field that seeks to combine the knowledge and expertise of diverse disciplines towards the aim of restoring impaired organ functions in the body. This paradigm shift will have a large impact in high as well as in middle and low-income countries. **Materials and methods** The International Atomic Energy Agency is running Coordinated Research Project (CRP) F23030-E31007 "Instructive Surfaces and Scaffolds for Tissue Engineering Using Radiation Technology" from 2014-2019. The main goal of the project is to engineer instructive scaffolds and surfaces using radiation technology to create tissues from autologous and allogeneic human somatic cells to provide tissue grafts and decrease the need for human donors. This project is a joint effort of Human Health and Physical and Chemical Sciences divisions of IAEA's Department of Nuclear Sciences and Applications. 15 Member States are involved: Argentina, Bangladesh, Brazil, China, Egypt, Malaysia, Mexico, Poland, Portugal, Slovakia, Thailand, Turkey, the UK, Uruguay and USA. **Results** The project achieved results in following research directions: (i) investigation and optimisation of radiation synthesised 3D scaffolds; (ii) use of radiation sterilisation of the new instructive scaffolds and decellularised matrices; (iii) results of cell-cell-scaffold-matrix-ECM interaction studies; (iv) testing effectiveness of combining biological and non-biological material on regeneration/repair; and (v) forming an international network of scientists from different research directions and end-users in medical fields. **Discussion and Conclusion** Tissue engineered products are manufactured with materials that are easily available in the countries participating in the project. This will make their production more self-sufficient and cost-effective. This development will be beneficial for national healthcare systems. Application of local experience and knowledge will result in a higher quality and better safety of medical services to patients.

**Acknowledgement:** The CRP F23030-E31007 (2014-2019) is supported by the IAEA.