

9th Yazd International Congress and Student Award on Reproductive Medicine with 4th Congress of Reproductive Genetics

Key Lectures

K-59

Reproductive tissue engineering by marine scaffolds: Decellularization and 3D bio-printing

Tamadon A.

The Persian Gulf Marine Biotechnology Research Center, The Persian Gulf Biomedical Sciences Research Institute, Bushehr University of Medical Sciences, Bushehr, Iran.

Email: amintamaddon@yahoo.com

The body structure of marine invertebrates is made up of a variety of scaffolds of proteins, glycoproteins, carbohydrates, and bio-glass, all of which can be used to engineer human tissues, either intact or manipulated. The combination of existing scientific evidence shows that marine invertebrate scaffolds can create new capabilities in the pharmaceutical and medical industries. Production and recombination of human cell-compatible scaffolds from marine invertebrates or the removal of cells in invertebrates

and the use of the natural structure of marine scaffolds are applications of marine tissue engineering to produce soft reproductive tissues. As a result, the biodiversity of marine invertebrates of the Persian Gulf with simple body scaffolds for the extraction of bio-ink compounds for 3D bio-printers and the decellularization of their tissues has provided vast research potential. In this direction, the Marine Comparative and Experimental Medical Center in the Persian Gulf Marine Biotechnology Research Center has completed various projects in the construction of marine scaffolds. Three invertebrate species of the Persian Gulf have been studied for this purpose, which are jellyfish, brown algae, and sponge. In the 3D bio-printer made by the researchers of this center, alginate compounds extracted from brown algae were used for flexible scaffold printing. Furthermore, jellyfish tissue and sponge after decellularization were used to culture human fibroblasts.