

2<sup>nd</sup> World Congress and Expo on

# GRAPHENE & 2D MATERIALS

November 06-07, 2017 | Frankfurt, Germany



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### Bioartificial esophagus: Strategy for layered structure regeneration

A number of congenital and acquired disorders require esophageal tissue replacement. Various surgical techniques, such as gastric and colonic interposition, are standards of treatment, but frequently complicated by stenosis and other problems. Autologous graft therapies using tissues from colon, and small and large intestine or gastric transplantations have been attempted but have constraints like leakage, infection and stenosis at the implanted site, which leads to severe morbidity and mortality. An alternative for autologous grafts are allogenic and xenogenic grafts, which have better availability but disease transmission and immunogenicity limit their applications. Regenerative medicine approaches facilitate the use of biological constructs to replace or regenerate normal tissue function. Use of biodegradable and biocompatible scaffolds to engineer the esophagus promises to be an effective regenerative strategy for treatment of esophageal disorders. Nanotopography of the fibrous scaffolds mimics the natural extracellular matrix (ECM) of the tissue and incorporation of chemical cues and tailoring mechanical properties provide the right microenvironment for co-culture of different cell types. Scaffolds cultured with esophageal cells (epithelial cells, fibroblast and smooth muscle cells) might show enhancement of the biofunctionality *in vivo*. This review attempts to address the various strategies and challenges involved in successful tissue engineering of the esophagus. Novel approaches need to be designed to allow for peristalsis and vascularization in the engineered esophagus.

### Biography

Eun-Jae Chung has completed his PhD from the Korea University, Seoul, Korea. He is the Associate Professor of Seoul National University, Seoul, Korea. He has published more than 30 papers in reputed journals.

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