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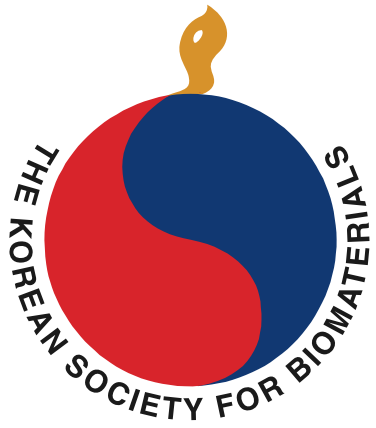
2022년 한국생체재료학회 추계 학술대회 및 총회

2022 Fall Meeting of the Korean Society for BioMaterials

September 29th~ 30th 2022, SONO BELLE JEJU



발표자료집
제26권 4호

- 일 시 : 2022년 9월 29일(목) ~9월 30일(금)
- 주 관 : 한국생체재료학회

http://www.ksbm.or.kr

This work was supported by the Korean Federation of Science and Technology Societies(KOFST)
Grant funded by the Korean Government.

PO-222 **Highly viable bioactive glass-enhanced cellulose acetate fibers printed via high resolution electrohydrodynamic printing for hydrogel reinforcement**

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PO-223 **Development of nanofiber hydrogels injectable with precise volume control**

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PO-224 **Small diameter vascular structure via dragging 3D printing technique to induce endothelium formation**

Hun-Jin Jeong[1,3,#], Hyoryung Nam[2,#], Jae-Seok Kim[3,7], Sungkeon Cho[4], Hyun-Ha Park[3,7], Young-Sam Cho[6,7], So-Jung Gwak[5,7], Jinah Jang[2,4,*] and Seung-Jae Lee[6,7,*]

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PO-225 **Effects of hydroxyapatite particle sizes on cellular activities of human adipose-derived stem cells in novel 3D scaffolds using a cryo-bioprinting process for tissue regeneration**

Jihyo Park[1,†], Jaehwa Hong[1,†], Chansong Lee[1], Minseong Kim[1], Min-Jeong Park[1], Gyeongyeop Han[1], Sowon Jeon[1], Joon Lee[1], Yeyoon Choi[1], Goeun Kim[1], Soyeon Han[1], Geunhoe Gu[1], MyungGu Yeo[1] and Bongsu Jung[1,*]

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분야 Ⅶ : Biosensor/Bio-Imaging

PO-226 **CD63 aptamer/IDE configuration aptasensor for rapid exosome detection**

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PO-227 **Electrical capacitance biosensor composed of DNA aptamer/MXene for Au microgap electrode/PCB System for detecting zika virus in human serum**

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PO-228 **Rapid electrochemical biosensor composed of truncated DNA aptamers of interdigitate electrode to detect dengue virus in clinical sample**

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PO-229 **Biosensor for STX detection using aptamer and porous platinum**

JeongAh Park[1] and Taek Lee[1,*]

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PO-230 **High-speed dual-target biosensors with Au microgap electrodes and aptamer/MXene nanosheets for cytokine factor detection**

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PO-231 **Localized Surface Plasmon Resonance (LSPR) biosensor with multifunctional DNA 3way-Junction applied to a hollow Au spike-like nanoparticle for the detection of portable Avian influenza virus mutants (H5N1)**

Hayeon Lim[1] and Taek Lee[1,*]

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PO-232 **Bimetallic electrodes passivated with hyaluronic acid for smart healthcare applications**

Hye Hyeon Han[1] and Sei Kwang Hahn[1,*]

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PO-233 **Development of device for cat healthcare monitoring using Smartphone**

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PO-224

Small diameter vascular structure via dragging 3D printing technique to induce endothelium formation

Hun-Jin Jeong[1,3,#], Hyoryung Nam[2,#], Jae-Seok Kim[3,7], Sungkeon Cho[4], Hyun-Ha Park[3,7], Young-Sam Cho[6,7], So-Jung Gwak[5,7], Jinah Jang[2,4,*] and Seung-Jae Lee[6,7,*]

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Small diameter vascular (SDV) disease is the leading cause of death globally. SDV transplantation is performed as a treatment for vascular disease. Due to the high demand for SDV grafts, several off-the-shelf products (Dacron, Teflon, and GORE-TEX) made of synthetic polymers have been developed as alternatives. Although several products have been developed, clinical trial remains challenging. The main reason is the absence of endothelium of reconstructed SDV, that could lead to thrombosis and intimal hyperplasia in anastomotic lesions. In addition, the surface thrombotic of the synthetic polymer used in the graft and the formation of turbulent blood flow, which can cause platelet activation, is a problem for SDV structure graft. For successful vascular tissue reconstruction and replacement, endothelial layer formation such as native vascular tissue should be considered.
In this study, we fabricated engineered SDV structure with cell arrangement similar to those of real artificial vascular by dragging 3D printing technique using synthetic polymer and cell-laden bioinks (HUVECs, HAoSMCs). We evaluated the co-culture of HUVECs with HAoSMCs. It was confirmed that the human umbilical cells migration to the inward through the pores in the structure and induced the formation of the endothelium.

PO-225

Effects of hydroxyapatite particle sizes on cellular activities of human adipose-derived stem cells in novel 3D scaffolds using a cryo-bioprinting process for tissue regeneration

Jihyo Park[1,†], Jaehwa Hong[1,†], Chansong Lee[1], Minseong Kim[1], Min-Jeong Park[1], Gyeongyeop Han[1], Sowon Jeon[1], Joon Lee[1], Yeyoon Choi[1], Goeun Kim[1], Soyeon Han[1], Geunhoe Gu[1], MyungGu Yeo[1] and Bongsu Jung[1,*]

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This study is to fabricate cryo-bioprint collagen/hydroxyapatite(HA) 3D scaffold and to compare attachment and proliferation rate of human adipose-derived stem cells (hASCs) on the scaffold by tuning sizes of the HA particles. Cryo-bioprinting which is a special technique using lower temperature while printing for tissue engineering was adopted to manufacture the 3D scaffold. The scaffolds contain various hydroxyapatite particle sizes were evaluated by scanning electron microscopy (SEM) imaging and energy dispersive X-ray spectrometer (EDS). Thereafter, hASCs were seeded within the scaffolds to analyze early cell attachment and proliferation rate by the size of HA particles. The degrees of cell adhesion and proliferation of hASCs were analyzed via MTT assay by calculating metabolic activity of the cells. As a result, the smaller particle sizes in the scaffold led the higher cell adhesion and proliferation rate.