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**Visualization of Transport Phenomena in Regenerated Cartilage Tissue** KENTA HAARI, MASAO WATANABE, YOSHINORI SAWAE, TOSHIYUKI SANADA, Kyushu University — We studied the macroscopic transport phenomena in regenerated articular cartilage tissue. Regenerated cartilage tissue is proposed for the substitution of artificial cartilage as a new medical treatment, to the patient of articular disease such as osteoarthritis. When regenerated cartilage tissue is selected as the therapeutic approach, it should possess not only structural strength as supporting material, but also physiological and biological functions, such as transport of necessary materials to sustain cell activity. Cartilage tissue is significantly different from other tissues for its rich highly sulfated extra cellular matrix (ECM), and is peculiar in its avascularity, hence materials, such as nutrition and oxygen are transported from connected tissue or periosteum mainly by diffusion. Therefore we focused on this mass diffusion process in cartilage tissue. We engineered regenerated cartilage tissue by seeding chondrocyte into the scaffold of agarose. Diffusion process was visualized by fluorescent tracers saturated in regenerated cartilage tissue. Diffusion measurements were performed during fluorescent tracer desorption from regenerated cartilage tissue to PBS (pH7.4).

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