

Artificial Protein Biomaterials for Tissue Regeneration and Repair

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The University of Tokyo**



Genetically engineered proteins are emerging as a new class of biomaterials in tissue engineering. Recombinant artificial proteins can be designed to possess physical and chemical properties that match the microenvironment of the tissue to be replaced in the body. Here we discuss various strategies to engineer artificial proteins for biomaterials in tissue regeneration and wound repair. In our laboratory, artificial protein biomaterials have been designed to mimic both the elasticity and biological properties of native skin tissue. We show that these artificial protein substrates can support the attachment and proliferation of human skin keratinocyte stem cells *in vitro*. Separately, we are interested to synthesize silver particles as wound treatment therapies. Using artificial proteins as templates, we show that silver particles can be synthesized under physiological conditions. In summary, artificial proteins show promise for use as biomaterials in regenerative medicine and tissue engineering.

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Cooperation: Center for NanoBio Integration, The University of Tokyo

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