Fabrication of the surface-grooved scaffold to mimic extracellular matrix between nerve cells for neural regeneration

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This study presents the surface-fiber-assisted molding for mimicking the nerve-specific extra-cellular matrix to differentiate the nerve stem cells. To recover the nerve cells, the new treatment using nerve stem cells has been researched and it is important to research the nerve-specific scaffold which is capable of differentiate the nerve stem cells effectively in the tissue engineering area. By this necessity, many techniques to producing the structure which forms the surroundings to make cell alignment, differentiation, and migration have been carried out. In this work, PLGA (poly(Lactide-co-Glycolide)) is used as the supporter, and PEO fibers are adapted to fabricate grooves on a surface to construct the optimal conditions of cell activity. It is expected that this microenvironmental system can achieve the compensation of these existing weaknesses and be applied to guide the assembly of the tissues naturally in the area of tissue engineering.