

Preparation of multi-channel neural scaffold and its biocompatibility with schwann cells

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Central Nervous System (CNS) has a limited ability to regenerate after a traumatic injury. Rehabilitation has been treated as a sole solution for this problem. However, using neural stem cell and neural scaffold for the nerve regeneration becoming an emerging alternative. In this study, as regulating growth of axon is essential for those therapy, we developed a scaffold to control the growth of axon. We prepared the three-dimensional nerve tissue engineering scaffolds with the micro-sized hollow channels by using a raw material, Poly Ethylene Glycol (PEG). Channels are engraved with aligned patterns which mimic a natural extracellular matrix followed by a coating with Polypyrrole (PPy) which is a conductive polymer. Other studies have shown that neuronal deficits were restored when neurons are cultured on a certain directional surface with electrical stimulations. Therefore, our scaffolds have structures that give physical and electrical cues for the growth of axon.