

PCL-based Matrices for Guided Tissue Regeneration

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Polycaprolactone (PCL) is one of most widely used biodegradable polyesters having biocompatibility for medical and tissue engineering applications. The PCL shows slower degradation rate (more than 1 year depending on its mol. wt.) and is more flexible (T_g, -60 to -70 °C) than other biodegradable polyesters. Guided tissue regeneration to treat defect organs is now widely applied. In this study, the PCL was fabricated into membranes and nonporous/porous microspheres and used as substrates for various guided tissue regeneration. Various bioactive agents, such as growth factors, plasmid DNA and stem cells, were also incorporated into the PCL substrates for enhanced tissue regenerations. The PCL-based guided tissue regenerations including bone, tendon, trachea and nerve regenerations (membrane types) and urinary/fecal incontinence and vocal fold treatments (injectable microsphere types) are discussed in this presentation (Fig. 1).



Fig.1. Some examples of PCL-based guided tissue regeneration.