

Description of Additional supplementary files

Supplementary Mov. 1 The deployment of the device utilizing SMP on the intact nerve of a SD rat by applying PBS at 37 °C.

Supplementary Mov. 2 Rats moving freely after device implantation.

Supplementary Mov. 3 Representative recorded signal traces of the Bio-Neuro group at week 2. A correlation is observed between the patterns of electrical signals and the phases of walking or resting.

Supplementary Mov. 4 Hindlimb movement under evoked electrical stimulation applied on the proximal end in the Bio-Restor group at week 3