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Paper Title: Functional Connectivity in Reconstructed Sensory-Spinal Cord Network with Electrical Recording

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## Abstract

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Functional changes in neuronal networks of spinal cords develop chronic pain. In this study, we aimed to elucidate the mechanism of alteration in neuronal networks that cause chronic pain by reproducing sensory information processing network of spinal cord in a culture system, which transmit pain information. Dorsal root ganglion neurons and spinal neurons were co-cultured on high-density microelectrode arrays, and spontaneous activity was recorded electrically. The results showed that the two types of neurons connected via axons to form neuronal networks and that the neurons matured functionally in long-term culture. In the future, we aim to elucidate the pathogenic mechanism of chronic pain by identifying the activity transmission pathway and evaluating the reproducibility of the pain transmission circuit.

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