교차분화의 제어와 적용

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Regualtion and Application of Transdifferentiation

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〈요 약〉

Neural crest derived cells are noted for the long lasting plasticity during lineage commitment process and the potential for transdifferentiation into other neural crest derivatives. Schwann cells in particular have been reported to transdifferentiate into melanocytes and myofibroblasts. Detailed studies of transdifferentiation at the molecular level have been hampered by difficulty in isolating sufficient quantity of primary cells or cellular materials. Here, we describe a robust in vitro system in which Schwannoma cells undergo an apparent transdifferentiation into myofibroblasts. Importantly, we induce the transdifferentiation by downregulating a single transcription factor, Sox10, thereby identifying a key molecular event in this process. Myofibroblasts thus generated showed carbachol-stimulated contraction and calcium transients and express several established myofibroblast-specific genes. These results suggest that generating desired cell types based on 'knock-down' of critical genes may be a viable strategy.