

**Directed differentiation of human-induced pluripotent stem cells generates active motor neurons.**

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**Public Summary:**

The potential for directed differentiation of human-induced pluripotent stem (iPS) cells to functional postmitotic neuronal phenotypes is unknown. Following methods shown to be effective at generating motor neurons from human embryonic stem cells (hESCs), we found that once specified to a neural lineage, human iPS cells could be differentiated to form motor neurons with a similar efficiency as hESCs. Human iPS-derived cells appeared to follow a normal developmental progression associated with motor neuron formation and possessed prototypical electrophysiological properties. This is the first demonstration that human iPS-derived cells are able to generate electrically active motor neurons. These findings demonstrate the feasibility of using iPS-derived motor neuron progenitors and motor neurons in regenerative medicine applications and in vitro modeling of motor neuron diseases.

**Scientific Abstract:**

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