

Product

Generation of human motor neurons

Indication

Human motor neuron diseases

Value Propositions

- ▶ Patient-specific, fast, and scalable
- ▶ Potential use for drug testing and development

Market

- ▶ \$11.22 billion—
Global stem cell market
(13.73% CAGR 2023-2030)

Intellectual Property

- ▶ PCT published
[WO2021189043A1](#)

Publications

- ▶ Modeling Hypoxia-Induced Neuropathies Using a Fast and Scalable Human Motor Neuron Differentiation System [Link](#)
- ▶ FMRP promotes RNA localization to neuronal projections through interactions between its RGG domain and G-quadruplex RNA sequences [Link](#)

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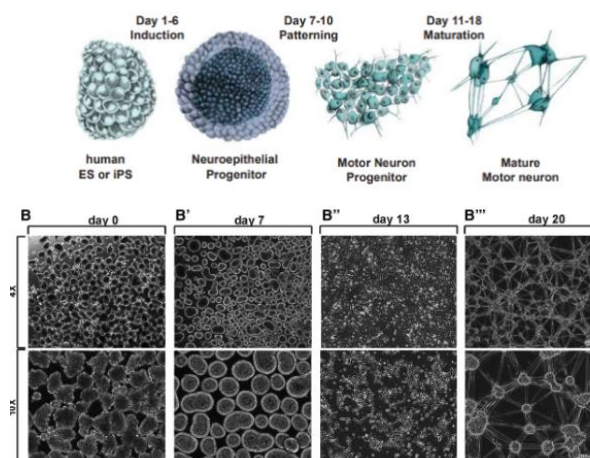
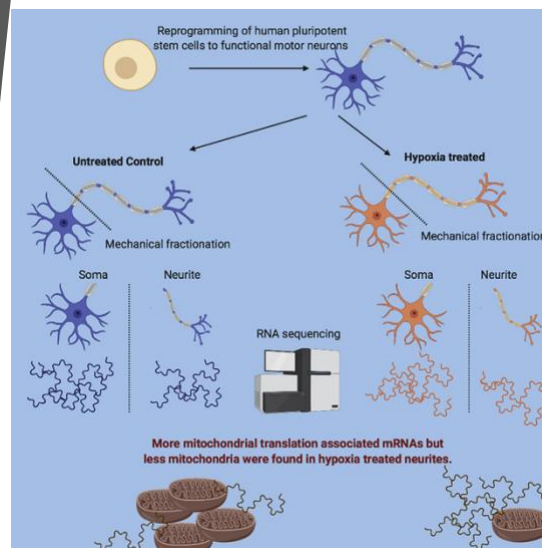
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Lack in development of human motor neurons

Human motor neuron diseases are irreversible and devastating diseases for which there are no curative treatments. Amyotrophic lateral sclerosis (ALS), spinal muscular atrophy, primary lateral sclerosis, and peripheral diabetic neuropathy are a few diseases that affect the motor neurons. Of these, ALS is the most common and is projected to affect 8 million individuals globally by 2029. Peripheral diabetic neuropathy is also highly prevalent and projected to affect 7 million individuals by 2026. Current protocols to study the human motor neuron are time consuming and limit experimental size and capabilities. Furthermore, the quality of the motor neurons developed are often not pure and thus, make it difficult for quality drug testing and development.

Generation of Human Motor Neurons

Dr. Holger Russ has developed a patient-specific, *in-vitro* scalable differentiation system of iPSCs into pure human motor neurons to assess human motor neuron disease mechanisms and therapeutic targets. The scalable suspension based differentiation system generates over one thousand functional human motor neurons in 3 weeks. Their novel culture system is able to model diseases of motor neuropathy such as ALS and peripheral diabetic neuropathy. Furthermore, they have achieved effective fractionation of the cell soma and neurites.



Figures: Representative photos at various stages of the differentiation protocol