

Human spinal cord organoid for disease modeling and drug screening

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Spinal cord is produced by the folding of the neural plate along anterior-posterior axis via an embryonic process called neurulation. Perturbation of this process often leads to a common congenital malformation, neural tube defects, raising the importance to develop *in vitro* model recapitulating human neurulation. The advent of organoid technology, which produces 3D structure resembling parts of organs from ESCs/iPSCs, has provided novel ways to study human organogenesis and to model human diseases. Recently, we developed novel organoid model that exhibits specific morphogenetic features of spinal cord development, such as neural plate formation, elongated tube-like structure and profound production of spinal cord-type motor neurons. Human spinal cord organoids will be a useful tool for assessing genetic and environmental factors affecting spinal cord development, and screening 'personalized drugs' for spinal cord diseases such as Amyotrophic Lateral Sclerosis (ALS).

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