

L. 3 Mechanisms regulating human neurogenesis

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Malformations of the human neocortex are present in about 1% of the general population and represent a major cause of developmental disabilities including severe epilepsy. To date, mouse lines carrying mutations of genes so far identified in human patients with cortical malformations only partially recapitulate the expected cortical phenotypes and therefore do not provide reliable models to entirely understand the molecular and cellular mechanisms responsible for these disorders. Therefore we decided to combine the in vivo mouse model and the human derived cerebral organoids in order to better comprehend the mechanisms involved in migration of neurons during human brain development and tackle the causes of neurodevelopmental disorders. Our results show that we can model human brain development and neuronal migration disorders using human cerebral organoids and contribute to open new avenues to bridge the gap of knowledge between human brain malformations and existing mouse models.

