Insights into cerebellar development and medulloblastoma.

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Abstract

Cerebellar development is an extensive process that begins during early embryonic stages and persists more than one year after birth in human. Therefore, the cerebellum is susceptible to acquire various developmental abnormalities leading to numerous diseases such as medulloblastoma, the most common pediatric malignant brain tumor. One third of the patients with medulloblastoma are incurable and survivors have a poor quality of life due to the aggressiveness of the broad-spectrum treatments. Within the past few years, it has been highlighted that medulloblastoma is a heterogeneous disease that is divided in four molecular subgroups. This recent advance in the field, combined with the development of associated preclinical models for each subgroup, should enable, in the future, the discovery and use of targeted therapy in clinical treatments for each subtype of medulloblastoma. In this review, we first aim to show how deregulation of cerebellar development can lead to medulloblastoma formation and then to present the advances in the molecular subgrouping of medulloblastoma and the associated preclinical models.

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