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# The WHO 2016 CNS Tumor Scheme: A summary and perspective

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The WHO 2016 classification scheme and more recent advances have resulted in major diagnostic shifts for diffuse gliomas, a subset of ependymomas, and embryonal neoplasms. The new approach focuses on the integrated diagnosis, which incorporates classic histopathology with specific molecular signatures. A number of surrogate immunohistochemical (IHC) stains are now also available for identifying biologically distinct molecular subtypes. The most common division is that of the IDH-mutant diffuse gliomas from their biologically more aggressive IDH-wildtype counterparts. Other examples include histone H3 mutations in the diagnosis of diffuse midline gliomas (K27M mutation) and pediatric glioblastomas (G34R/V mutations), as well as the identification of a more aggressive supratentorial ependymomas defined by RELA fusion (L1CAM positive) and posterior fossa B ependymomas (loss of H3K27me3 staining). Also, in diffuse astrocytomas, the majority of IDH-mutant and H3 G34-mutant cases additionally show loss of ATRX expression and strong p53 staining, serving as clues for further molecular testing as needed. Oligodendrogliomas still require detection of 1p/19q codeletion by molecular testing in addition to IDH mutation, although the vast majority of these can be predicted ahead of time based on the combination of classic histology with retained ATRX expression and negligible p53 expression. In the case of medulloblastoma subtyping, a number of WNT and SHH surrogate stains are available, whereas other IHC markers may be useful for identification of embryonal tumor with multilayered rosettes (LIN28), atypical teratoid/rhabdoid tumor (INI1, BRG1), and high-grade neuroepithelial tumor with BCOR alteration (BCOR).