ATRX, a marker for glioma

ATRX function
The protein encoded by the ATRX gene belongs to a chromatin-remodeling pathway (H3.3-ATRX-DAXX) and is required for the incorporation of H3.3 in chromatin.

Mutations in this gene are associated with diverse changes in pattern of DNA methylation, chromosome congression during mitosis, and segregation in meiosis as well as telomere dysfunction.¹

These changes may provide a link between chromatin remodeling, DNA methylation, and gene expression in developmental processes [provided by RefSeq, Jul 2017]. Phenotypically, the mutations result in several characteristic developmental abnormalities such as mental retardation, facial dysmorphism and alpha-thalassemia (ATRX) syndrome.¹

(A) Immunohistochemical staining of human glioma tissue using HPA001906 shows strong nuclear immunoreactivity in cancer cells. (B) Western blot analysis in A-549 cells transfected with control siRNA, target specific siRNA probe #1 and #2, using Anti-ATRX antibody. Remaining relative intensity is presented. Loading control: Anti-GAPDH.

(B) Immunofluorescence staining in HeLa cell line with AMAb90784 shows clear nuclear (without nucleoli) staining in green. Microtubule probe is visualized in red. (C) Western blot analysis in A-549 cells transfected with control siRNA, target specific siRNA probe #1 and #2, using Anti-ATRX antibody. Remaining relative intensity is presented. Loading control: Anti-GAPDH.

References
ATRX, a marker for glioma

Around 2012, several research groups worldwide started to study the potential link between ATRX and glioma.

In this paper, the authors summarized the recent studies and the correlations that had been made between different markers such as IDH1, p53, 1p/19q and ATRX with different types of glioma.

The paper concluded that depending on mutations in IDH1, 1p/19q and ATRX, gliomas could be classified into three groups:
- Molecular Astrocytomas
- Molecular Oligodendrogliomas
- Molecular Glioblastomas

ATRX has now become a routine marker for classification of gliomas and is most often used in combination with various other markers such as IDH1, p53, 1p/19q, PARP1, GFAP, KI-67 and EGFR.

The images below show examples of immunohistochemical stainings of select cases of glioblastomas, astrocytomas and oligodendrogliomas using antibodies for ATRX, IDH1 and GFAP.