Diffuse Glioma Testing Resources

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## Purpose

To provide a short list of resources for health care providers who take care of diffuse glioma patients.

## Links to important papers in DropBox

### What we know about glioblastoma

[The molecular era of GBM begins](https://www.dropbox.com/s/j0g6w0l5a2kvsce/_ParsonsScience2008.pdf?dl=0)

### The rise of IDH1/2

[Original work comes from TCGA **GBM** dataset!?](https://www.dropbox.com/s/w9vnuvhse0wcujb/_YanNEJM2009.pdf?dl=0)

[Lower grade diffuse gliomas examined by massive sequencing effort](https://www.dropbox.com/s/wk0p2mhb9yol7ox/_Brat_NEJM2015.pdf?dl=0)

[IDH mutant diffuse and anaplastic astrocytomas: pretty much the same thing](https://www.dropbox.com/s/ijmlhvj8om4cqg0/_ReussActaNP2015.pdf?dl=0)

[The end of IDH wild type diffuse astrocytoma: WHO update with c-IMPACT-NOW update 3](https://www.dropbox.com/s/u9pewa9gnxaheug/_Brat2018_Article_CIMPACT-NOWUpdate3Recommended.pdf?dl=0)

### Why methylation of MGMT is important

[The original New England Journal report](https://www.dropbox.com/s/paqv9ey72y3u0ih/_HegiMGMT_GBM_NEJM2005.pdf?dl=0)

[Wick’s review piece](https://www.dropbox.com/s/gmhh05iuxrwafnu/_Wick2014NatRevNeurol.pdf?dl=0)

### In our backyard: Mayo’s “Revolution in Brain Tumor Diagnosis”

[Mayo stratifies gliomas with 1p/19q, IDH status and TERT promoter methylation](https://www.dropbox.com/s/chud0zwxz2l2lmc/_EckelPassowNEJM2015.pdf?dl=0)

### IDH-WT grade II or III infiltrating astrocytoma: GBM in sheep’s clothing

[Adult IDH wild type grade II and grade III gliomas should be further stratified](https://www.dropbox.com/s/6slfkwv1d5wv40q/_AibaidulaNeuroOncol2017.pdf?dl=0)

[Adult IDH wild type grade II and III gliomas belong to GBM molecular class](https://www.dropbox.com/s/wlp06zz1l7tkbw5/_ReussActaNP2015.407.pdf?dl=0)

[Inventing a new class of diffuse glioma to accommodate the molecular findings](https://www.dropbox.com/s/u9pewa9gnxaheug/_Brat2018_Article_CIMPACT-NOWUpdate3Recommended.pdf?dl=0)

[Prognostic relevance of genetic alterations to diffuse lower grade gliomas](https://www.dropbox.com/s/t7pjpnrrkflyd0m/_AokiNeuroOncol2018.pdf?dl=0)

### So you think it might be a “Diffuse astrocytic glioma, IDH‑wildtype, with molecular features of glioblastoma, WHO grade IV”… how do you support your impression?

[EGFR amplification, +7 and -10 shown to be helpful. . . at least in classification](https://www.dropbox.com/s/6bol1opw2kae2st/_StichelActaNP2018.pdf?dl=0)

[TERT promoter mutation, +7, -10 shown to improve prognostication in IDH WT diffuse lower grade gliomas](https://www.dropbox.com/s/mhzkyrtxi23wd87/_WijnengaActaNP2017.pdf?dl=0)

[But prognosis and prediction are mostly a matter of IDH mutation and MGMT promoter methylation](https://www.dropbox.com/s/rm5aycdeq0zj752/_Collins-2014.pdf?dl=0)

### Additional testing may be useful in some IDH mutant tumors too

[CDKN2A loss is associated with shortened survival in IDH mutant grade II and III astrocytomas](https://www.dropbox.com/s/2n6p7u3qv03mncw/_ReisJNEN2015.pdf?dl=0)

### Other considerations

[Diffuse midline gliomas and histone mutations: nomenclature considerations](https://www.dropbox.com/s/tsso7m33tb787ql/_LouisActaNP2018.pdf?dl=0)

[H3K27M mutants: a plurality in pediatric high grade glioma and DIPG](https://www.dropbox.com/s/n4h1tmdu23mchdt/_MackayCancerCell2017.pdf?dl=0)

### In infants and children, see especially…

#### BRAF Alterations

[Pilocytic astrocytoma and BRAF translocation/duplication](https://www.dropbox.com/s/zy0sxpulkt2ciea/_JonesCancerRes2008.pdf?dl=0)

[BRAF V600E in context with BRAF translocation/duplications: V600E heralds other tumors too](https://www.dropbox.com/s/jfbzo1qdgeo90t0/_HorbinskiJNEN2013.pdf?dl=0)

#### Other uncommon low grade neuroepithelial tumors

[Low-grade neuroepithelial tumors: BRAF, FGFR1 and MYB mutations](https://www.dropbox.com/s/vxdbeewo4pmaqj6/_QaddoumiActaNP2016.pdf?dl=0)

#### High grade supratentorial pediatric neuroepithelial tumors

[Uncommon supratentorial high grade neuroepithelial tumors](https://www.dropbox.com/s/zkled131o69t933/_SturmCell2016.pdf?dl=0)

### High grade supratentorial pediatric neuroepithelial tumors

[Developing ontology: Figure 1 and Table 1 in this paper show how to start dissecting these rare and lethal pediatric tumors](https://www.dropbox.com/s/ndispmwhuobgb3t/_HwangJCO2018.pdf?dl=0)

[Pediatric gliomas: a review](https://www.dropbox.com/s/6egdn5f1iqt8a6u/_SturmJCO2017.pdf?dl=0)

### Methylation profiling based classification: what’s the fuss?

[Time to put away the microscope?](https://www.dropbox.com/s/39cbhe7dkkac5tq/_CapperNature2018.pdf?dl=0)

### Panels for diffuse gliomas come of age.

[A diffuse glioma NGS panel covering a variety of targets. (Duesseldorf)](https://www.dropbox.com/s/y5vlcysyysixudg/_ZacherBrainPathol2017.pdf?dl=0)

## Important websites:

#### Sites for exploring The Cancer Genome Atlas (TCGA) data:

[Memorial Sloan Kettering Cancer Center:cBioPortal](http://www.cbioportal.org)

[Broad Institute of MIT and Harvard: Firebrowse](http://firebrowse.org)

[Fred Hutch, Seattle, Oncoscape](https://oncoscape.v3.sttrcancer.org)

#### Site for connecting to methylation profiling in Europe:

[Heidelberg methylation profiling](https://www.molecularneuropathology.org/mnp)