Machine Learning Prediction Report

Patient ID:	UCSF-PDGM-0536	**Patient Age:**	58.0
Report Date:	2026-01-07 00:03:19	**Model Used:**	Gradient Boosting Classifier

Final Prediction: *IDH-mutant*

Clinical Interpretation

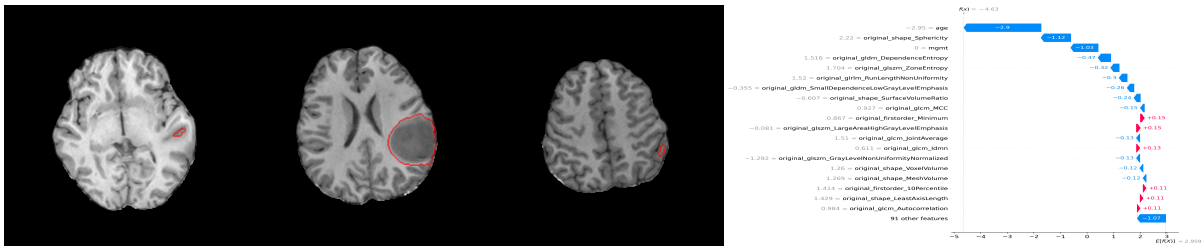
Patient age which is very high (relative value : 4) compared to the training dataset moved the prediction toward IDH-Wildtype; Higher age at diagnosis is consistently observed in gliomas classified as IDH■wildtype compared with those bearing IDH■mutation—for example, one large cohort reported median ages of ~60.5 years for IDH-wildtype versus ~38.2 years for IDH-mutant gliomas (p < 0.001).

MGMT methylation status which is absent moved the prediction toward IDH-Mutant; MGMT promoter methylation often appears as an important predictor of IDH mutation in machine learning models because both reflect the G-CIMP epigenetic phenotype typical of lower-grade gliomas.

Original GLZSM Zone Entropy which is very low (relative value : 1) compared to the training dataset moved the prediction toward IDH-Mutant; Lower values reflect less complexity in the distribution of zone sizes, which is associated with IDH-mutant tumors.

original_glrlm_RunLengthNonUniformity which is very low (relative value : 1) compared to the training dataset moved the prediction toward IDH-Mutant; Run Length Non-Uniformity measures the variability of run lengths within an image, with lower values indicating more uniform run lengths, a pattern that is characteristic of IDH-mutant tumors.

Prediction Explanation (SHAP Analysis) & Tumor Segmentation Slices



Features pushing the prediction higher (towards IDH-wildtype) are red; lower (towards IDH-mutant) are blue.

References

Characteristics and prognostic factors of age-stratified high-grade intracranial glioma patients: A population-based analysis.
Extent and prognostic value of MGMT promotor methylation in glioma WHO grade II.
Multiparametric MR radiomics in brain glioma: models comparation to predict biomarker status.
Behavior-Oriented Nomogram for the Stratification of Lower-Grade Gliomas to Improve Individualized Treatment.
Molecular heterogeneity in glioblastoma: potential clinical implications.