Monoamine Oxidase A (MAO A) oxidizes monoamine neurotransmitters resulting in reactive oxygen species which cause cancer.

A study shows that MAO A expression is increased in human glioma tissues and cell lines. MAO A inhibitors, clorgyline or the near-infrared-dye MHI-148 conjugated to clorgyline (NMI), were cytotoxic for glioma and decreased invasion in vitro. Using the intracranial TMZ-resistant glioma model, clorgyline or NMI alone or in combination with low-dose TMZ reduced tumor growth and increased animal survival. NMI was localized specifically to the tumor. Immunocytochemistry studies showed that the MAO A inhibitor reduced proliferation, microvessel density and invasion, and increased macrophage infiltration. In conclusion, we have identified MAO A inhibitors as potential novel stand-alone drugs or as combination therapy with low dose TMZ for drug-resistant gliomas. NMI can also be used as a non-invasive imaging tool. Thus has a dual function for both therapy and diagnosis [1].

1)
Kushal S, Wang W, Vaikari VP, Kota R, Chen K, Yeh TS, Jhaveri N, Groshen SL, Olenyuk BZ, Chen TC, Hofman FM, Shih JC. Monoamine oxidase A (MAO A) inhibitors decrease glioma progression. Oncotarget. 2016 Mar 22;7(12):13842-53. doi: 10.18632/oncotarget.7283. PubMed PMID: 26871599; PubMed Central PMCID: PMC4924682.