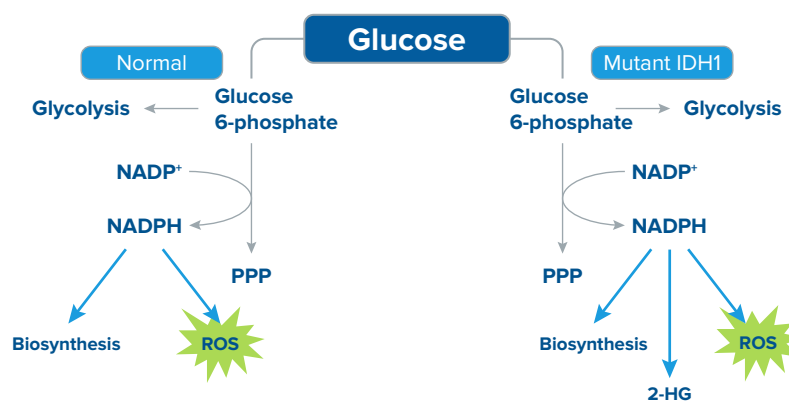


# Next-Generation Oncometabolomics For Biomarker Discovery and Disease Diagnosis: Glioma and 2-hydroxyglutarate



Gain-of-function mutations in isocitrate dehydrogenase 1 (IDH1) occur in multiple types of cancer. These mutations result in the enzyme producing the oncometabolite, 2-hydroxyglutarate, which leads to the formation of cancer.

Oncometabolomics is a field of study that focuses on the analysis of the metabolic changes that occur in cancer cells. It aims to identify new biomarkers and therapeutic targets for cancer. A biomarker is a measurable characteristic that indicates a biological state, disease, or condition. It can be used to help diagnose a disease, monitor progression, or assess the effectiveness of a treatment. As cancer is a metabolic disease, metabolites have been frequently identified as biomarkers for cancer, such metabolites are often referred to as oncometabolites. One notable example is the oncometabolite 2-hydroxyglutarate (2-HG). A metabolomics study found that 2-HG is produced at high levels in glioma cells harboring a gain of function mutation in isocitrate dehydrogenase (IDH), which is an enzyme in the citric acid cycle. IDH mutations occur in >80% of grade II/III gliomas. The production of 2-HG consumes NADPH. NADPH is primarily produced by the pentose phosphate pathway and is used to buffer oxidative stress. Accordingly, 2-HG production in cancer cells requires increased activity in the pentose phosphate pathway and sensitizes the cells to oxidative stress.

## Panome Bio's Advantages

### Next-Generation Metabolomics™

Through an untargeted analysis and robust computational methods we provide an unbiased and global view of metabolism. We then use next-generation methods to decrease the complexity of datasets, allowing more impactful experimental designs than previously possible, including multi-omic integration, longitudinal analysis, large cohorts >1k, and more.

### Comprehensive Workflow

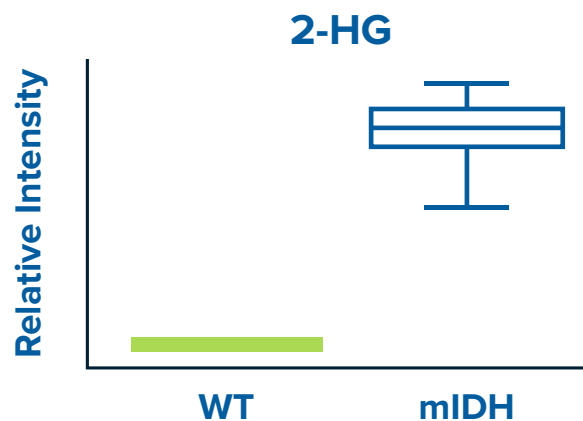
Starting from sample preparation, to experimental design and data analysis, we handle all aspects of your metabolomics screen.

### Personalized Data Analysis Report

Metabolomics data is complex, personalized data analysis reports provide a straightforward interpretation of your results. We work with you to define an analysis plan that will meet your needs.

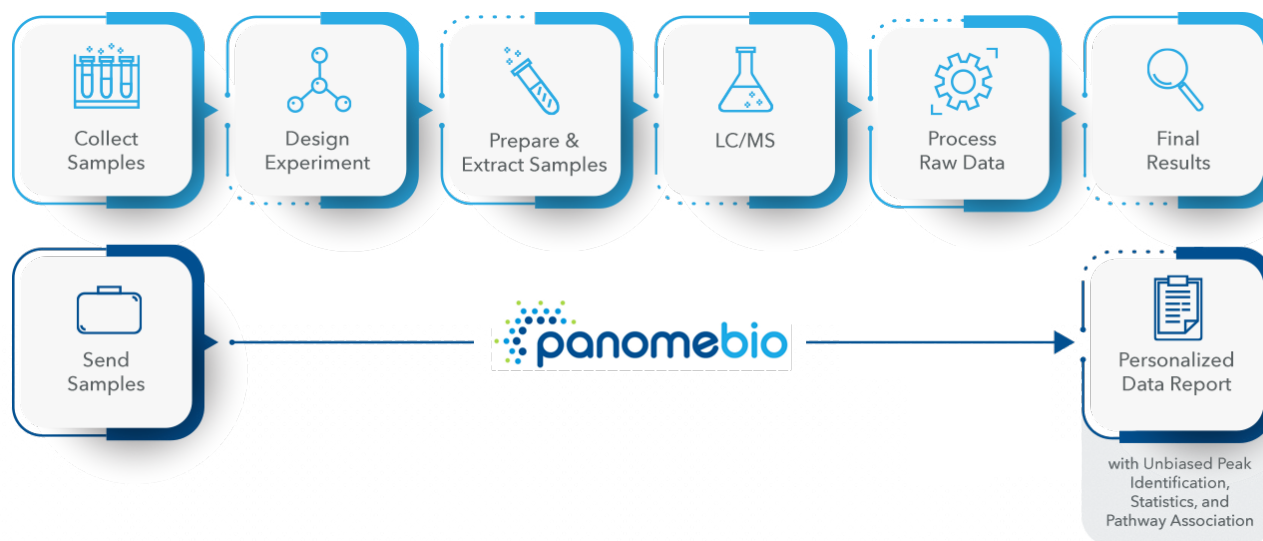
Using metabolomics, insights on therapeutics can also be made. The study found that inhibiting the enzyme that produces 2-HG reduced the growth of glioma cells, indicating that targeting 2-HG production may be an effective therapeutic strategy for glioma. This study highlights the power of metabolomics and how it can be used as a discovery tool. With Panome Bio's Next-Generation Metabolomics platform, you can discover new biomarkers, evaluate therapeutic targets, and get valuable insights to the phenotype of disease.

Read more about this study:  
 Gelman, et al., Cell Reports 22, 512–522, 2018.  
 Gelman et al. Cancer & Metabolism (2015) 3:13



2-HG is produced at high levels in glioma cells harboring a gain of function mutation in isocitrate dehydrogenase.

## Panome Bio™ - Biomarker Discovery with Next-Generation Metabolomics™



Panome Bio can help you profile and discover biomarkers with Next-Generation Metabolomics while saving time and resources. Our next-generation methods can take your research beyond A versus B studies and into more complex experiments such as large cohort studies and longitudinal analysis. Our technology provides you with a global and unbiased view of metabolism with quantitative accuracy while our computational methods provide a clear view of your complex metabolomics data. Contact us to start a project!

Contact Us



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