



HMT Newsletter

Dear friends,

The objectives of the Human Metabolome Technology Newsletter are to advance the science of metabolomics and to promote the study and research work in this area. With our newsletters we inform our clients and associates about new technologies, events, conferences, publications, awards, patents and other newsworthy items concerning HMT metabolomics. Stay tuned for the release of new capabilities and offers from HMT this spring and summer. If you have questions about working with us on a new project, please do not hesitate to contact us.

Sincerely,

Alexander Buko, PhD
Vice President
Human Metabolome Technologies America

Article Spotlight

Adenylate kinase 4 (AK4) is involved in hypoxia tolerance, drug resistance and the regulation of mitochondrial activity. These findings from S. Terai et al. (2016) using combination of HMT metabolic profiling and AK4 knockdown cells with microarrays, provides a new potential target for efficient anticancer therapies by controlling AK4 expression.

Metabolome analysis by HMT showed increased levels of the tricarboxylic acid cycle intermediates in AK4 knockdown cells, while AK4 overexpression lowered them. Microarray analysis detected the increased gene expression of two key enzymes in the TCA cycle supporting our metabolomic results.

HMT Updates

Event Information

AACR Annual Meeting 2016

April 16-20, New Orleans, Louisiana.

HMT will join AACR in support of research in cancer metabolism. Please drop by our booth #1454 to see what is new and share your research with us. We look forward to seeing you soon. intermediates in AK4 knockdown cells, while AK4 overexpression lowered them. Microarray analysis detected the increased gene expression of two key enzymes in the TCA cycle supporting our metabolomic results.

Modulation of anti-cancer drug sensitivity through the regulation of mitochondrial activity by adenylate kinase 4.

Fujisawa K., *et al.*, *J. Exp. Clin. Cancer Res.*, **35**: 48.

Adenylate kinase is a key enzyme in the high-energy phosphoryl transfer reaction in living cells. An isoform of this enzyme, adenylate kinase 4 (AK4), is localized in the mitochondrial matrix and is believed to be involved in stress, drug resistance, malignant transformation in cancer, and ATP regulation. However, the molecular basis for the AK4 functions remained to be determined. We found that AK4 was involved in hypoxia tolerance, resistance to anti-tumor drug, and the regulation of mitochondrial activity. These findings provide a new potential target for efficient anticancer therapies by controlling AK4 expression.

Quantitative metabolome profiling reveals the involvement of the kynurenine pathway in influenza-associated encephalopathy.

Torii Y., *et al.*, *Metabolomics*, **12**: 84.

Influenza-associated encephalopathy is a serious complication of influenza and is the most common form of acute encephalitis/encephalopathy in Japan. The number of reports from other countries is increasing, reflecting international recognition and concern. Comprehensive metabolite profiles revealed five metabolites as potential biomarkers for influenza-associated encephalopathy; the tryptophan-kynurenine metabolic process could be associated with its pathophysiology.

Different Polar Metabolites and Protein Profiles between High- and Low-Quality Japanese Ginjo Sake.

Takahashi K., *et al.*, *PLoS One*, **11**: e0150524.

Japanese ginjo sake is a premium refined sake characterized by a pleasant fruity apple-like flavor and a sophisticated taste. Because of technical difficulties inherent in brewing ginjo sake, off-flavors sometimes occur. However, the metabolites responsible for off-flavors as well as those present or absent in higher quality ginjo sake remain uncertain. Here, the relationship between 202 polar chemical compounds in sake identified using capillary electrophoresis coupled with time-of-flight mass spectrometry and its organoleptic properties, such as quality and off-flavor, was examined.



HMT is a leading company providing metabolomic profiling based on unique and high performance CE-MS technology. We complete over 400 projects a year and our technology has contributed to the advancement of research in a variety of scientific areas.

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