



HMT Newsletter

Dear Friends,

As another winter comes to a close, we at HMT are excited for the hope of spring and new exciting research from our customers. As the demand for metabolomics increases in a variety of research areas such as oncology, microbiology, and immunology, we are constantly working to better our services to meet those needs.

Sincerely,

Tsutomu Hoshiba
CEO
Human Metabolome Technologies America

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 so we can create the right metabolic profile to meet your needs.

Featured articles

Cerebrospinal fluid metabolomics identifies a key role of isocitrate dehydrogenase in bipolar disorder: evidence in support of mitochondrial dysfunction hypothesis.

Yoshimi N., et al., *Molecular Psychiatry*, (2016) 1-7

Although it is suspected that mitochondrial dysfunction contributes to bipolar disorder (BD), a precise mechanism is still missing. Metabolomics of cerebrospinal fluid from BD patients reveals that a major mitochondrial metabolite isocitrate was significantly higher in BD patients than in control patients. In addition, authors found genetic and proteomic alterations in the isocitrate dehydrogenase (IDH) subtypes (IDH3A and IDH3B) in BD patients independent of the drug treatment. Authors suggest that these findings help to link mitochondrial dysfunction to BD, and isocitrate can be a biomarker for BD revealed by metabolomics.

Metabolomic analysis of the mechanism of isoflurane induced apoptosis of PC12 cells

Ando K., et al., *Journal of Metabolomics*, 1: 3.

General anesthetics can cause neurotoxicity, however the mechanism is still unclear. Reactive oxygen species (ROS) generally increase in injured mitochondria, and can cause neurotoxicity. To evaluate the possibility of whether isoflurane generates neurotoxicity by ROS generation, the authors conducted metabolomic analyses by exposing a well-characterized rat adrenal pheochromocytoma cell line (PC12) to isoflurane. Exposure to isoflurane decreased the levels of reduced glutathione and increased oxidized glutathione, indicating that isoflurane accelerated oxidative stress. Using metabolomics, these results suggest that general anesthetics can cause neurotoxicity by oxidative stress.

Metabolic analysis of antibody producing Chinese hamster ovary cell culture under different stresses conditions

Badsha M. B., et al., *Journal of Bioscience and Bioengineering*, in press

The time course extra- and intracellular metabolome data of the Chinese hamster ovary (CHO)-K1 cell line, which produce therapeutic proteins with complex post-translational modifications, are investigated under a control and stress conditions. Under the addition of NaCl and trehalose, cell showed greatly suppressed cell growth, whereas the increased antibody production. The metabolic profiling has revealed features of intracellular metabolism under such high performance conditions, and several key intermediates engaged in mechanism of antibody production.



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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