HMT Newsletter

Greetings HMT friends and colleagues,

Oshogatsu, or Japanese New Year, is a very special time in Japan. One of the most important and most celebrated Japanese holidays. People clean their homes from top to bottom (*ōsōji*), prepare traditional food (*osechi ryōri*), and send their New Year's greeting cards, or *nengajo*.

By sending *nengajo* to friends, family and colleagues, the people of Japan can share their wish for a peaceful, prosperous and happy new year in the hopes of preserving their good relations in the year ahead. 2017 is the year of the rooster.

For our January newsletter we are sending you our *nengajo* and wishes for a successful and happy New Year from our office to yours.

Please enjoy our year end publications below. This month's publications examine the metabolomics of both big (human liver hepatoma cells) and the small (CD4+ T cells and mouse embryonic stem cells) using our sensitive CE-MS profiling to provide impacting metabolite quantitation and pathway analysis.

Best regards and Happy New Year,

Alexander Buko, PhD
Vice President
Human Metabolome Technologies America

Featured articles

Fatty acid metabolic reprogramming via mTOR-mediated inductions of PPARγ directs early activation of T cells.

Angela M. *et al.*, *Nat. Commun.*, **7**: 13683.

To fulfil the bioenergetic requirements for increased cell size and clonal expansion, activated T

cells reprogramme their metabolic signatures from energetically quiescent to activated. However, the molecular mechanisms and essential components controlling metabolic reprogramming in T cells are not well understood. Here, we show that the mTORC1-PPARγ pathway is crucial for the fatty acid uptake programme in activated CD4+ T cells.

Novel chemoimmunotherapeutic strategy for hepatocellular carcinoma based on a genome-wide association study.

Goto K. *et. al., Sci. Rep.*, **6**: 38407.

Pharmacotherapeutic options are limited for hepatocellular carcinoma (HCC). Recently, we identified the anti-tumor ligand MHC class I polypeptide-related sequence A (MICA) gene as a susceptibility gene for hepatitis C virus-induced HCC in a genome-wide association study (GWAS). To prove the concept of HCC immunotherapy based on the results of a GWAS, in the present study, we searched for drugs that could restore MICA expression.

The mevalonate pathway regulates primitive streak formation *via* protein farnesylation.

Okamoto-Uchida Y. *et at., Sci. Rep.*, **6**: 37697.

The primitive streak in peri-implantation embryos forms the mesoderm and endoderm and controls cell differentiation. The metabolic cues regulating primitive streak formation remain largely unknown. Here we utilised a mouse embryonic stem (ES) cell differentiation system and a library of well-characterised drugs to identify these metabolic factors.

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