

## Serum metabolomics by GC/MS as a novel diagnostic approach for diseases

Masaru YOSHIDA, M.D., Ph.D., Associate Professor, Kobe University

Metabolomics provides data about all the metabolic processes of a cell or organism. So far, the changes that occur in the levels of metabolites during the development of diseases have not been fully elucidated. Here, we examined the changes of metabolite levels in the sera and tissues using gas chromatography mass spectrometry (GC/MS) with the aim of achieving a detailed understanding of the pathogenesis of diseases. Our results suggest that metabolomics is capable of representing the various degrees of diseases, and furthermore our findings will aid in the discovery of therapeutic agents for diseases by metabolomics approaches.

(Keywords: metabolomics, disease, mass spectrometry)

### Reference

1. Nishiumi S, Shinohara M, Ikeda A, Yoshie T, Hatano N, Kakuyama S, Mizuno S, Sanuki T, Kutsumi H, Fukusaki E, Azuma T, Takenawa T, and Yoshida M\*. Serum metabolomics as a novel diagnostic approach for pancreatic cancer. *Metabolomics*. 2010 Nov;6(4):518-28. (\*correspondence)
2. Kondo Y, Nishiumi S, Shinohara M, Hatano N, Ikeda A, Yoshie T, Kobayashi T, Shiomi Y, Irino Y, Takenawa T, Azuma T, Yoshida M\*. Serum fatty acid profiling of colorectal cancer by gas chromatography/mass spectrometry. *Biomark Med*. 2011 Aug;5(4):451-60. (\*correspondence)
3. Ooi M, Nishiumi S, Yoshie T, Shiomi Y, Kohashi M, Fukunaga K, Nakamura S, Matsumoto T, Hatano N, Shinohara M, Irino Y, Takenawa T, Azuma T, and Yoshida M\*. The GC/MS-based profiling of amino acids and TCA cycle-related molecules in ulcerative colitis. *Inflammation Res*. 2011 Sep;60(9):831-40. (\*correspondence)
4. Tsugawa H, Bamba T, Shinohara M, Nishiumi S, Yoshida M, Fukusaki E. Practical Non-targeted Gas Chromatography/Mass Spectrometry-based Metabolomics Platform for Metabolic Phenotype Analysis. *J Biosci Bioeng*. 2011 Sep;112(3):292-8.
5. Shiomi Y, Nishiumi S, Ooi M, Hatano N, Shinohara M, Yoshie T, Kondo Y, Furumatsu K, Shiomi H, Kutsumi H, Azuma T, Yoshida M\*. A GCMS-based metabolomic study in mice with colitis induced by dextran sulfate sodium. *Inflamm Bowel Dis*. 2011 Nov;17(11):2261-74. (\*correspondence)
6. Hori S, Nishiumi S, Kobayashi K, Shinohara M, Hatakeyama Y, Kotani Y, Hatano N, Maniwa Y, Nishio W, Bamba T, Fukusaki E, Azuma T, Takenawa T, Nishimura Y, Yoshida M\*. A metabolomic approach to detect early stages of lung cancers. *Lung Cancer*. (in press) (\*correspondence)
7. Ikeda A, Nishiumi S, Shinohara M, Yoshie T, Hatano N, Okuno T, Kutsumi H, Banba T, Fukusaki E, Takenawa T, Azuma T, Yoshida M\*. Serum metabolomics as a novel diagnostic approach for gastrointestinal cancer. *Biomed Chromatogr*. (in press) (\*correspondence)
8. Yoshida M\*, Hatano N, Nishiumi S, Irino Y, Izumi Y, Takenawa T, Azuma T. Diagnosis of gastroenterological diseases by metabolome analysis using gas chromatography-mass spectrometry. *J Gastroenterol*. (in press) (\*correspondence)