

**Title of Research:**

12\_PT01-05

## **Development of *in vitro* screening endocrine disruptor by steroid profiling**

**Principal Investigator:**

**Takeshi BAMBA** (Department of Biotechnology, Graduate School of Engineering, Osaka University)

2-1 Yamadaoka Suita, Osaka 565-0871 Japan

phone/fax: +81-6-6879-7418

e-mail: bamba@bio.eng.osaka-u.ac.jp

**Summary of Research:**

The aim of this study was to apply metabolic profiling to phenotype analysis of cells exposed to chemicals, and to develop a system to evaluate endocrine disruptors by multimarker profiling based on chemical exposure-induced endogenous metabolite changes.

First, we constructed a platform to simultaneously analyze steroids in steroidogenesis pathways. To construct a versatile evaluation system, gas chromatography/mass spectrometry (GC/MS), which is known for its versatility, was used in this analysis. Seventeen steroids were simultaneously analyzed under optimized preparation and GC/MS conditions.

Next, we constructed a screening system for endocrine disruptors. Following the protocol of OECD TG 456, the human adrenocortical carcinoma cell line H295R exposed to forskolin and prochloraz was used as a positive control. Steroid profiles were obtained successfully.

**Timeline:** November 1, 2012 -

**Topics:**

2<sup>nd</sup> New LRI Annual Conferences (Yaesu First Financial Building, August 31, 2013) "Development of *in vitro* screening endocrine disruptor by steroid profiling"

**Publications:**

1. Bamba Takeshi, Masashi Okuno, Toshiyuki Yamashita, Eiichiro Fukusaki  
Simultaneous analysis of steroids by GC/MS for evaluation of endocrine disruption  
65th SBJ Annual Meeting, International Conference Center Hiroshima (Hiroshima),  
September 20, 2013
2. Masashi Okuno, Toshiyuki Yamashita, Eiichiro Fukusaki, Bamba Takeshi  
Development of *in vitro* screening endocrine disruptor by steroid profiling  
Metabolome Symposium 2013, Kyushu University School of Medicine Centennial Hall  
(Fukuoka), October 3 – 4, 2013